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Проблемы создания природно-заповедного фонда и сохранения биологического разнообразия в степной зоне Украины / **А.С. Кобець, С.В. Олійник, Р.О. Стрілець, Т.В. Тимочко, Б.О. Барановський, О.С. Григоренко, В.В. Манюк, Ю.І. Грицан, О.В. Ангурець, О.П. Бурковський** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 6–11

Приведен анализ современного состояния вопросов заповедания и охраны природной среды в Днепропетровской области. Рассмотрены аспекты расширения площади природно-заповедного фонда и участие государственных и общественных организаций в сохранении биоразнообразия, развитии экосети области как одной из фундаментальных предпосылок перехода Украины к экологически сбалансированному развитию. Отмечается, что причиной ухудшения биоразнообразия является антрополическое воздействие на окружающую среду, которое продолжалось весь предыдущий период и сейчас трансформировалось в другие формы. **Ключевые слова:** природно-заповедный фонд (ПЗФ), экосеть, биоразнообразие, заказник, национальный природный парк, агробиоразнообразие.

Василюк А.В. Проблемы включения категории земель природно-заповедного фонда в Государственный земельный кадастр / **А.В. Василюк, К.А. Борисенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 12–14.

Установление на местности границ территорий природно-заповедного фонда (ПЗФ) не гарантирует сохранение их границ и целостности. При подготовке проектов создания территорий ПЗФ органы Минприроды, как правило, не включают документацию по землеустройству. Сложилась практика создания территорий ПЗФ без документации, следовательно, отражаются в государственной отчетности по количественному учету земель. Кроме того, часто создаются территории ПЗФ без изменения целевого назначения земельных участков. Решить проблему для ПЗФ может законодательное введение норм, которые бы четко указывали, из чего состоит проект создания ПЗФ (необходимо внесение изменений в Закон Украины “О природно-заповедном фонде Украины”), и предусматривали механизмы финансирования разработки проектов землеустройства ПЗФ на этапе их создания, а незапоздалое их вынесение границ в натуре. **Ключевые слова:** природно-заповедный фонд, государственный земельный кадастр, охрана природы.

Хромых О.В. Изменение содержания хлорофиллов травянистых декоративных растений в условиях загрязнения почвы соединениями

кобальта и марганца / **О.В. Хромых** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 15–22

Исследовано влияние загрязнения почвы соединениями кобальта и марганца на содержание фотосинтетических пигментов в проростках некоторых видов травянистых декоративных растений. Установлено, что изменения содержания хлорофиллов зависят от состава загрязнителей, от специфических особенностей вида. У растений, устойчивых к загрязнению почвы ионами кобальта и марганца, прослеживается увеличение концентрации хлорофиллов а и в. Чувствительные к загрязнению виды реагируют снижением содержания зеленых пигментов, особенно хлорофилла в. **Ключевые слова:** кобальт, марганец, стресс, пигментный комплекс, хлорофилл.

Соломенко Л.И. Поиск критериев для определения экологической безопасности использования пестицидов / **Л.И. Соломенко, В.Л. Драченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 23–27.

С целью определения связи изменений метаболизма растений пшеницы с транслокацией фосфорорганических пестицидов на примере инсектицида Би-58 и фунгицида Дерозал использована система показателей на молекулярном (физиологические процессы) и онтогенетическом (толерантность растительных организмов на определенных фазах онтогенеза) уровнях организации жизни. Для определения экологически опасных концентраций ксенобиотиков предлагается изучать динамику содержания хлорофилла в зеленой массе растений под воздействием фосфорорганических пестицидов. Установлено, что необходимость использования пестицидов должна определяться не только их защитными функциями от вредителей и болезней, но и возможным воздействием на качество полученной продукции и агрофитоценоз в целом. **Ключевые слова:** ксенобиотики, фосфорорганические пестициды, экологически опасные концентрации, фитотоксичность, хлорофилл.

Суслова Е.П. Разнообразие и состояние древесных насаждений парка им. А.П. Чехова г. Харьківск (Донецкая область) / **Е.П. Суслова, Д.В. Задорожная, Л.В. Хархота** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 28–31.

Исследованы древесно-кустарниковые насаждения парка им. А.П. Чехова, которые относятся к 82 видам и формам 44 родов 24 семейств. Аборигенная фракция местной флоры представлена 16 видами деревьев

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и 5 видами кустарников. В парковых насаждениях произрастают ценные малораспространенные, а также старовозрастные и выдающихся размеров деревья аборигенных и интродуцированных видов.

Ключевые слова: деревья, кустарники, возраст, жизнеспособность

Кунах О.Н. Экоморфическое разнообразие и пространственная организация сообщества мезопедобионтов урботехнозема / **О.Н. Кунах, А.В. Жуков, Ю.А. Балюк, М.П. Федюшко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 32–41.

Приведены результаты изучения пространственного варьирования экоморфической структуры почвенной мезофауны технозема с травянистым покровом методами OMI- и RLQ-анализа. Почвенная мезофауна экспериментального участка представлена 26 видами с общей плотностью 234,47 экз./м². В экологической структуре животного населения почвы преобладают протанты и палюданты, гигрофилы, мезотрофоценоморфы, эндогейны и эпигейные топоморфы, сапрофаги. Такие едафические характеристики, как твердость почвы, электропроводность, мощность подстилки, а также высота травостоя играют важную роль в структурировании экологической ниши сообщества мезопедобионтов. Выявлены четыре ключевых функциональных группы мезопедобионтов и найдена роль едафических факторов в их пространственном варьировании. **Ключевые слова:** почвенная мезофауна, экологическая ниша, пространственная экология, экоморфы.

Шапарь А.Г. Создание заказников на нарушенных горными работами землях как способ формирования соединительных элементов экологической сети / **А.Г. Шапарь, О.А. Скрипник** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 42–25.

Установлено, что создание техногенных ландшафтных заказников обеспечивает условия формирования вторичных экосистем, которые являются основой вторичного био-разнообразия. Выяснено, что использование современных ГИС-технологий для мониторинга, проектирования, визуализации данных в виде графических документов позволяет повысить эффективность формирования вторичных экосистем. Техногенные ландшафтные заказники, созданные на нарушенных горными работами землях, являются основным резервом для построения соединительных элементов экосети в промышленных регионах степной зоны Украины.

Ключевые слова: техногенный ландшафтный заказник, формирование вторичных экосистем, соединительные элементы экосети.

Листопадский М.А. Роль световой структуры древостоев Биосферного заповедника "Аскания-Нова" в формировании дендрофильной орнитофауны: репродуктивный период / **М.А. Листопадский** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 46–50.

Исследован современный процесс формирования фауны птиц дендрофильного комплекса под воздействием световой структуры древостоев в репродуктивный период 2006–2013 гг. Определен видовой состав орнитофауны насаждений. Проведено ранжирование градаций световой структуры по степени информационной связи с каждым из исследуемых видов птиц. Установлено, какой именно характер световой структуры определяет формирование пространственных экологических ниш у представителей лесостепного, неморального, бореального и других фауногенетических комплексов.

Ключевые слова: дендрофильная орнитофауна, лесная типология, световая структура, сообщество, фактор, экологическая ниша, явление.

Боброва О.М. Особенности размножения представителей рода *Berberis L.* в условиях ботанического сада ДНУ им. Олеса Гончара / **О.М. Боброва, Ю.В. Лихолат, Ю.В. Лесько** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 51–53.

Изучены особенности семенного и вегетативного способов размножения видов рода *Berberis L.* Отмечено, что виды с Европейским, Среднеазиатским и Северокитайским природным ареалом обладают высокой энергией прорастания и всхожести семян. Установлено регенерационную способность черенков по влиянию регуляторов роста на степень укоренения. Указаны виды с высокой, средней и низкой степенью укоренения.

Ключевые слова: барбарис, размножение, стимуляторы, семена, прорастание, черенки, корнеобразование

Кочет В.М. Общая характеристика ихтиофауны охранных акваторий малых и средних рек Днепропетровской области / **В.М. Кочет, А.О. Зубкова, Н.Е. Чередник** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 54–59. Показано, что охранные акватории Днепропетровской области играют первичную роль в сохранении видов рыб с международным и региональным статусом охраны. До 95 % видового состава рыб живут в пределах

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зарезервированных охранных акваторий. Отмечается, что оптимизация процесса восстановления редких видов ихтиофауны должно базироваться на основе научно урегулированной рекреационной и хозяйственной нагрузки с формированием заинтересованности со стороны пользователей в процессе сохранения редких представителей ихтиофауны.

Ключевые слова: видовой состав, ихтиофауна, малые реки, экологическое состояние, статус охраны.

Ижик Г.В. Роль жуков-ксилофагов в буковых природных лесах и пралесах / **Г.В. Ижик, А.Ю. Мателешко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 60–64.

Изучена роль наиболее распространенных видов жесткокрылых (Coleoptera), в частности жуков-ксилофагов, в разложение мертвой древесины в буковых лесах Украинских Карпат. Представлен видовой список жуков-ксилофагов в буковых пралесах из семейств: Cerambycidae, Vuprestidae, Anobiidae, Lytalexyloniidae, связанных с древесиной на разных стадиях ее разложения.

Ключевые слова: жесткокрылые, пралес, природные леса, мертвая древесина, биоразнообразие, бук.

Волошина Н.О. Распространение адвентивного вида валлиснерии спиральной в водоемах Северного Степного Приднестровья / **Н.О. Волошина** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 65–68.

Предоставлена обзорная характеристика валлиснерии спиральной – одного из адвентивных видов сосудистых растений. Изложены результаты исследований ее распространения в водоемах Северного Степного Приднестровья по литературным данным за столетний период и собственные находки в последние пять лет.

Ключевые слова: валлиснерия спиральная, адвентивный вид, водоемы, Северное Степное Приднестровье.

Дубына Д.В. Раритетное фиторазнообразие экосети степной зоны Украины: представленность и анализ / **Д.В. Дубына, П.М. Устименко, Л.П. Вакаренко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 69–72.

Сравнительный анализ систематической, экологической и географической структур созофитов элементов экосети региона показал их близкое подобие к такому анализу региона в целом. Установлен раритетный фитоценофонд насчитывающий 312 ассоциаций, которые относятся к 47 формациям. Раритетные ассоциации проанализированы

по характеру ассоциированности популяций доминирующих видов в сообществе, по аутофитосозологическому значению доминантов и ботанико-географическому. Утверждается, что создание и обеспечение функционирования региональной экосети будет способствовать сохранению и возобновлению составляющей раритетной фитостромы.

Ключевые слова: степная зона, экосеть, раритетный фитофонд, раритетный фитоценофонд.

Математическое моделирование в исследовании устойчивости кукурузы и пшеницы к комбинированному действию засухи и гербицидов / **А.С. Россихина-Галича, А.Н. Винниченко, Ю.В. Лихолат, Ю.И. Грицан** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 73–76.

На примере комбинированного влияния двух факторов – осмотического давления (имитируемой засухи) и гербицида фронтьер – через прикорневую зону на побеги пшеницы и кукурузы в пределах полного двухфакторного лабораторного эксперимента определены регрессивные зависимости модуля сдвига активности супероксиддисмутазы от варьирования на трех уровнях факторов. Получены коррелируемые с ферментативной активностью оценки индекса устойчивости исследуемых растений к экзогенному влиянию факторов.

Ключевые слова: засуха, гербициды, супероксиддисмутазы, пшеница, кукуруза, протекти, двухфакторный эксперимент, индекс устойчивости.

Лядская И.В. Особенности изменения агрегатной структуры техноземов по профилю / **И.В. Лядская** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 77–81.

Выявлены особенности распределения агрегатных фракций по слоям в педоземах, дерново-литогенных почвах на серо-зеленых и красно-бурых глинах, а также на лессовидных суглинках Никопольского марганцеворудного бассейна. Представлена общая оценка состояния техноземов по показателю структурности. При помощи кластерного анализа результатов исследования определено, что во всех типах техноземов распределение фракций по горизонтам можно выделить гомогенные группы, сходные в своем распределении по слоям. Установлено, что в верхних горизонтах наблюдается более высокое содержание фракций размером от < 0,25 до 5–3 мм, а в нижних горизонтах преобладает содержание фракций размером от 3–5 до > 10 мм.

Ключевые слова: рекультивация, агрегатная фракция, коэффициент структурности.

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Амолин А.В. Изучение гнездовых стадий пчел *Xylocopa valga* и *Ceratina chalybea* на юго-востоке Украины / **А.В. Амолин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 82–86.

Приводятся сведения о гнездовых стадиях, экологии гнездования и гнездовых паразитах двух видов пчел – *Xylocopa valga* и *Ceratina chalybea*. Данные многолетних исследований на юго-востоке Украины позволяют разработать реальные меры по сохранению популяции вида *Xylocopa valga*, занесенного в Красную книгу Украины, в трансформированных человеком экосистемах.

Ключевые слова: стадия гнездования, *Xylocopa valga*, *Ceratina chalybea*, сохранение популяции, юго-восток Украины.

Манюк В.В. Объекты геологического наследия в Природно-заповедном фонде Украины. / **В.В. Манюк** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 87–90.

Рассматриваются роль геологической составляющей природной среды в формировании природно-заповедного фонда Украины, исторические аспекты возникновения и развития понятия – “объект геологического наследия” как важной части окружающей среды, а также проблема признания сохранения георазнообразия равно как и биоразнообразия.

Ключевые слова: геологический памятник природы, георазнообразия, ПроГЕО, геологическая среда, природно-заповедный фонд.

Ганин Г.Н. Педофаунистический Кадастр – основа биоресурсной оценки почв (на примере беспозвоночных Приамурья) / **Г.Н. Ганин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 91–95.

Обосновывается целесообразность существования Педофаунистического Кадастра как составной части Почвенного Кадастра. На примере беспозвоночных южной части российского Дальнего Востока обсуждается возможность биоресурсной оценки почвенных животных. Приведены сравнительные данные видового разнообразия и экологических показателей мезопедобионтов южной тайги дальневосточного региона России.

Ключевые слова: почвенные беспозвоночные, мезофауна, биоресурс, биомасса, почвы, Приамурье, Дальний Восток.

Реут А.А. Охрана редкого вида *Paeonia anomala* L. на Южном Урале / **А.А. Реут, Л.Н. Миронова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 96–101.

Приведены результаты интродукционного изучения редкого вида флоры Республики Башкортостан *Paeonia anomala* L. на базе Ботанического сада-института Уфимского научного центра РАН. Представлены данные фенологических наблюдений, биометрические показатели и элементы семенной продуктивности вида в культуре и естественных условиях произрастания. Обсуждаются проблемы расширенного воспроизводства *P. anomala* с использованием регулятора роста растений Biodux. Дается оценка успешности его интродукции в лесостепной зоне Башкирского Предуралья по комплексу биологических и хозяйственных признаков. **Ключевые слова:** *Paeonia anomala*, биологические особенности, интродукция, продуктивность, регулятор роста Biodux.

Шевцова Л.В. Сточные воды предприятий гостиннично-ресторанного комплекса как потенциальная угроза биоразнообразию водных экосистем / **Л.В. Шевцова, Л.В. Береза-Киндзерская** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 102–105.

Представлены результаты исследования химического состава сточных вод гостиннично-ресторанного комплекса в г. Киев. Выявлено присутствие в составе сточных вод токсичных для гидробионтов анионных поверхностно-активных веществ, растворимых форм азота и фосфора, органических веществ. Определены потенциальные угрозы от сточных вод для биоразнообразия водных экосистем. **Ключевые слова:** сточные воды, химический состав, гостиннично-ресторанный комплекс, объем водоотведения, биоразнообразие.

Ткачук А.П. Особенности накопления отходов и пути их переработки в Винницкой области / **А.П. Ткачук, С.В. Гусак** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 106–109.

Определено, что из общего количества образовавшихся отходов, наибольшую угрозу представляют золо-шлаковые Ладыжинской ТЭС, минеральные и бытовые отходы. Обоснована целесообразность увеличения доли утилизируемых и переработанных отходов (чрезвычайно низки их уровни), хотя за три последних года количество переработанных отходов увеличилось на 20 %, а хранящихся в специально отведенных местах уменьшилось на 16 %. Предложены пути переработки отходов. **Ключевые слова:** накопление отходов, утилизация, золо-шлаковые отходы, минеральные отходы, бытовые отходы.

Прокопенко Е.В. Герпетобионтные паукообразные букового леса (Закарпатская об-

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ласть) / **Е.В. Прокопенко В.А. Чумак, Т. Лачат** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 110–114.

Материал собран с помощью почвенных ловушек Барбера в полевые сезоны 2011 и 2012 годов в окрестностях с. Малая Уголька (Тячевский район Закарпатской области, Карпатский биосферный заповедник). Найдено 66 видов пауков, 10 видов сенокосцев и 3 рода ложноскорпионов. *Acantholycosa lignaria* (Clerck, 1757) и *Zelotes egebeus* (Thorell, 1871) впервые отмечены на территории Украины. Наибольшим количеством видов характеризуются такие семейства пауков и сенокосцев: *Linyphiidae* (25 видов), *Lycosidae* (9 видов), *Gnaphosidae* (8 видов), *Agelenidae* (5 видов), *Nemastomatidae* и *Trogulidae* (по 3 вида).
Ключевые слова: паукообразные, буковый пралес, фауна, *Aranei*, *Opiliones*, *Pseudoscorpions*.

Приседский Ю.Г. Влияние загрязнения почвы фторидами и сульфитами на ростовые показатели некоторых видов цветочно-декоративных растений / **Ю.Г. Приседский** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 115–119.

Установлено, что ростовые процессы агротума Гаустона и льна обыкновенного не подвержены достоверным изменениям в условиях внесения в почву фторида и сульфита натрия. Среди цветочно-декоративных растений наиболее чувствительными к загрязнению почвы оказались георгин обыкновенный и календула лекарственная.
Ключевые слова: загрязнение почвы, фториды, сульфиты, ростовые процессы, цветочно-декоративные растения.

Терещенко Л.И. Расширенное воспроизводство лесных ландшафтов Днепрпетровщины с привлечением селекционных подходов / **Л.И. Терещенко, С.А. Лось** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 120–123.

Обследованы лесные древостои в 6 государственных предприятиях лесного хозяйства Днепрпетровской области. Показан уровень биоразнообразия лесной древесной растительности в 4 насаждениях сосны обыкновенной и 3 дуба черешчатого. С целью улучшения лесосеменного дела в области отобрано 123 плюсовых дерева для создания лесосеменных плантаций. Полученные на таких плантациях улучшенные семена будут использоваться для создания новых лесных насаждений.
Ключевые слова: сосна обыкновенная, дуб черешчатый, биоразнообразие, генетический резерват, плюсовое дерево.

Чёрный Н.Г. Инвентаризация и оценка экологических угроз для природно-заповедных территорий (на примере Каневского природного заповедника) / **Н.Г. Чёрный, В.Н. Грищенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 124–128.

Впервые определён перечень экологических угроз для заповедных территорий Украины. Для Каневского природного заповедника выявлено 29 видов экологических угроз, из которых 4 – специфические для охраняемых экосистем. Дана краткая характеристика каждого вида угроз и уровня их влияния на три основных кластера заповедной территории. Определены наиболее устойчивые и наиболее уязвимые относительно угроз экосистемы заповедника.

Ключевые слова: охрана природы, экологические угрозы, заповедные экосистемы, сукцессии, загрязнение.

Ивашов А.В. Биологическое изкосистемное разнообразие планируемого Сивашского национального природного парка и перспективы его расширения / **А.В. Ивашов, В.М. Громенк, В.Б. Пышкин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 129–133.

Изучена структура биологического разнообразия и определены перспективы сохранности планируемого Сивашского национального природного парка (Крымское Присивашье). Подсчитано, что основу таксономического богатства составляет 1476 известных видов животных и растений, распределенных по 5 типам биогеоценозов. По приспособлению к экологическим условиям в целом сформировалось 7 фитоценоморфических и 12 зооценоморфических комплексов. Рекомендовано объединить в единый природоохранный комплекс два национальных парка: Азово-Сивашский и планируемый Сивашский природный.
Ключевые слова: Крымское Присивашье, заповедник, национальный парк, биоразнообразие, экосистема.

Крамаренко С.С. Фрактальный анализ пространственной структуры популяций наземных моллюсков / **С.С. Крамаренко, А.В. Жуков** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 134–137.

Раскрыта возможность применения фрактального анализа для характеристики пространственной структуры популяций наземных моллюсков. Показано, что характер пространственной организации наземных моллюсков носит четко выраженный фрактальный характер. Мера фрактальности для различных видов зависит от их экологических особенно-

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стей и прежде всего отражает реакцию к негативному воздействию иссушения (десикации). **Ключевые слова:** фрактальный анализ, наземные моллюски, десикация, пространственная структура популяции.

Брусенцова Н.А. Фаунистическое разнообразие НПП “Слобожанский” и его сохранение / **Н.А. Брусенцова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 138–142. Показано, что ландшафтное разнообразие Национального природного парка (НПП) “Слобожанский” определяет разнообразие фаунистическое. На сегодняшний день на территории парка насчитывается 436 видов животных. 36 из них нуждаются в особом внимании, потому что они являются редкими для Украины или уязвимыми на территории НПП “Слобожанский” и его окрестностей. Указаны факторы, которые могут негативно повлиять на количественное и качественное состояние разнообразия фауны и предложены мероприятия по его сохранению. **Ключевые слова:** фауна, национальный природный парк, разнообразие.

Скоропляс И.А. Сучасний стан популяцій *carlina cirsioides klovak* на горі касова / **И.А. Скоропляс** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 143–145. Обсуждаются материалы полевых исследований популяции редкого вида *C. cirsioides* на степных участках урочища Кассовая гора. Вид входит в состав формации *Anthericeta ramosum*, *Brachypodietea pinnati*, которые представлены ассоциациями *Anthericum ramosum* + *Carex humilis*, *Brachypodium pinnatum* + *Carex humilis*, *Brachypodium pinnatum* + *Anthericum ramosum*. Показано, что популяция *C. cirsioides* является толерантной и стойкой, количество вегетативных и генеративных растений значительно больше, чем растений других возрастных групп. **Ключевые слова:** *C. cirsioides*, Кассовая гора, ассоциация, формация, ювенильные, имма-турные, вегетативные, генеративные особи.

Гураль-Сверлова Н.В. Видовое разнообразие наземных моллюсков (*Gastropoda*, *Pulmonata*) степного Приднестровья / **Н.В. Гураль-Сверлова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 146–150. Проанализировано видовое многообразие наземных моллюсков, достоверно зарегистрированных на территории Херсонской, Запорожской и Днепропетровской областей Украины. Утверждается, что в дальнейшем фаунистические исследования необходимо проводить с использованием анатомических признаков,

поскольку этого требует присутствие в степном Приднестровье *Xerolenta obvia*, некоторых видов из рода *Helicopsis*. Возможно, это касается и некоторых представителей рода *Deroceras*. **Ключевые слова:** наземные моллюски, видовой состав, степное Приднестровье, Украина.

Ванзар О.М. Ценотическая приуроченность редких видов в ландшафтном заказнике общегосударственного значения “Цецыно” / **О.М. Ванзар, В.В. Романюк, О.Д. Каланча** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 151–155. Проведен фитоценотический анализ растительности. Выявлены типичные ассоциации, представляющие флору заказника. Установлено, что большинство ассоциаций характеризуется незначительной долей редкого компонента. В ряде ассоциаций увеличено количество адвентивных видов, что свидетельствует об общей синантропизации растительных группировок. **Ключевые слова:** растительность, заказник, ассоциации, редкие виды, адвентивные виды.

Егорова Т.М. Актуальные вопросы агроэкологического районирования Украины / **Т.М. Егорова, В.В. Конищук** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 156–161. Определены особенности методологии специального агроэкологического районирования и картирования Украины для решения проблем сбалансированного развития земель сельскохозяйственного назначения. Предложена унифицированная теория системы критериев, прикладных мероприятий агроэкологического районирования. Разработаны принципы природно-антропогенной таксономической классификации агроландшафтов. **Ключевые слова:** агрофера, ландшафт, агроэкологическое районирование, критерии, принципы, классификация, природно-антропогенные процессы.

К обоснованию создания техногенного заказника “Первомайский” / **А.Н. Сметана, О.А. Красова, А.А. Долина, Ю.В. Ярошук, Я.В. Таран, Е.А. Головенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 162–166. Представлены результаты исследований экотопического и биотического разнообразия территории автомобильного отвала Первомайского карьера ПАО “Северный ГОК”. Выявлены локальные популяции редких видов, из которых два занесены в Мировой Красный список, 6 – в Красную книгу Украины. Показано, что α -разнообразие раститель-

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ности превышает аналогичный показатель действующих и проектируемых техногенных заказников. Отмечена достаточно жесткая связь в совместном формировании почвенного и растительного покровов.

Ключевые слова: техногенный заказник, Ингулецкий экоридор, флористическое и ценоотическое разнообразие, пространственная дифференциация, созологическая ценность.

Левченко В.Б. Сохранение биологического разнообразия ценных лесорастительных экоценозов Житомирского Полесья / **В.Б. Левченко, И.В. Шульга, Ю.В. Остапчук** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 167–169.

Утверждается целесообразность использования специального анализа популяционной структуры лесного фонда на этапе поиска и диагностики. Для оценки характера редкости лесных сообществ, представленных в регионе исследований на незначительных площадях, обязательным является их территориальная идентификация по материалам лесоустройств. Проведены натурные исследования для определения их редкостных компонентов, региональных списков видов, подлежащих охране, эндемиков, а также привлечение других дополнительных свойств.

Ключевые слова: редкие растения, лесные сообщества, популяция, растительный фонд, лесные экоценозы, заповедные территории, биологическое разнообразие, исчезающие виды, охрана и сохранность природы.

Казанник В.В. Водно-болотная орнитофауна Святошинских прудов г. Киева и ее сезонные изменения / **В.В. Казанник, А.В. Турчик, В.О. Яненко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 170–174.

В основном с помощью маршрутного метода на Святошинских прудах обнаружено 33 вида водно-болотной орнитофауны, два из них занесены в Красную книгу Украины (черный коршун и орлан-белохвост) и охраняются Вашингтонской конвенцией (СІТЕС). Четыре вида достоверно отмечены – на гнездовании. В Красный список г. Киев занесены бугайчик, черный коршун, деркач и рыбалочка.

Ключевые слова: водно-болотная орнитофауна, Святошинские пруды, учеты, гнездовые виды, зимующие виды, численность, выводок.

Бессонова В.П. Действие Pb^{2+} и Cd^{2+} на фоне засоления $NaCl$ на показатели водного обмена листьев *Lolium perenne* L. / **В.П. Бессонова, Е.А. Пономарёва, О.Е. Иванченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – №

1(33). – С. 180–183.

Исследовано влияние тяжелых металлов ($Pb^{2+}+Cd^{2+}$) и засоления ($NaCl$) на показатели водообмена листьев *Lolium perenne* L. Установлено, что растения всех вариантов существенно не отличаются по содержанию общей воды в листьях. Количество связанной воды существенно выше у опытных растений. Наибольшие потери воды наблюдались в контроле, высокая водоудерживающая способность обнаружена у растений, подвергшихся воздействию совокупности изучаемых загрязнителей. Во всех вариантах интенсивность транспирации листьев выражена одновершинной кривой с максимумом в полуденные часы. Самая низкая интенсивность транспирации у листьев растений в вариантах с засолением почв.

Ключевые слова: *Lolium perenne* L., водный обмен, транспирация, водоудерживающая способность, формы воды, засоление, тяжелые металлы.

Назаренко Н.Н. Экологические шкалы видов флоры лиственных лесов северной Степи Украины / **Н.Н. Назаренко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 184–190.

Проанализированы методические подходы к разработке системы фитоиндикаторов лесных экосистем и фитоиндикационных шкал видов лесных экосистем. Разработана региональная фитоиндикационная шкала видов флоры северно-степных лиственных лесов. **Ключевые слова:** фитоиндикаторы, региональная фитоиндикационная шкала, степные лиственные леса.

Ловинська В.М. Состояние и производительность древостоев *Pinus sylvestris* L. и *Robinia pseudoacacia* L. Природного заповедника “Днепровско-Орельский” / **В.М. Ловинська, С.А. Ситник** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2014. – № 1(33). – С. 191–195.

Дана оценка древостоев *Robinia pseudoacacia* L. та *Pinus sylvestris* L. в разных возрастных группах на основе анализа лесотаксационных показателей в древостое Днепровско-Орельского заповедника. Проанализированы типы леса, типы лесорастительных условий, в которых сформированы и функционируют древостои акации белой и сосны обыкновенной, определены классы бонитета и полноты модальных древостоев. Исследована возрастная структура древостоев и зависимость их запаса от возраста.

Ключевые слова: лесотаксационные показатели, типы леса, возрастная структура, бонитет, запас древостоев, *Robinia pseudoacacia* L., *Pinus sylvestris* L.

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Problems of protected area creation and conservation of biodiversity in the steppe zone of Ukraine (p. 6–11)

A. Kobets, S. Oliynyk, R. Strilets, T. Tymochko, B. Baranovskiy, A. Grigorenko, V. Maniuk, Y. Grytsan, O. Angurets, A. Burkovskiy

The article deals with an analysis of the current state of nature conservation and environmental protection problems in Dnipropetrovsk region. The aspects of the expansion of Nature Reserve Fund and participation of public organizations and state bodies in the conservation of biodiversity, the development of an ecological network area as one of the fundamental conditions for Ukraine's transition to sustainable development are shown.

It is specified that the cause of the deterioration of the current state of biodiversity in the Dnipropetrovsk region is human impact on the environment, which continues for a long time and is not reduced but transformed into other forms: through the plowed areas and destruction of ecotypes and biocenosis, increasing of wastelands areas, dumps and landfills, overgrazing and failures of vegetation, uncontrolled logging in forests, unlimited harvesting of plant material for sale, lots of wide and narrow terrain roads in plantations, technological implications, unsubstantiated scientific forgery in the territories under the unique forest and meadow areas in Western Donbass on channel of Samara river and much more. Taxonomic structure of biota in frame of the region is more-less keeping on stable level, but level of of population groups is degrading, spatial structure of biocenosis changes in the direction of simplification and functional qualities that arise and act not in favor of ecotypes and landscapes and ultimately cause deteriorating the quality of human life.

Keywords: Nature Reserve Fund (NRF), ecological network, biodiversity, reserve, national park, agrobiodiversity.

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Problems of Inclusion of Nature-protected Area Categories to the State Land Cadastre (p. 12–14)

O. Vasyliuk, K. Borysenko

Law of Ukraine "On the Nature Reserve Fund of Ukraine" implies the need to designate the boundaries of nature-protected areas on the land. Several laws dictate state agencies to provide funding for the establishment of the boundaries of all protected areas. Nevertheless, our research has shown that setting boundaries areas of nature-protected areas on the ground does not guarantee the preservation and integ-

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city of their borders. In preparation of documents, which establish protected areas, employees of Environmental Ministry of Ukraine usually do not include documentation of land management and use to the document list. Therefore, when creating protected areas, areas are not defined in the State Land Cadastre. Boundaries of nature-protected areas are often established only after the allocation of funds for indication of the location on the ground, after the establishment of the protected areas, but not at the stage of their creation.

As it turned out, delineation of protected areas on the land also does not lead to their inclusion in the State Land Cadastre. Thus, the practice has been the creation of protected areas without the development of land management and use plans, which then leads to a lack of reflection on the state statistical reporting of quantifying the lands, territories of nature-protected areas. This is a direct threat to nature-protected areas, meaning a risk of approved construction plans on the areas, etc.

As of 01/01/2014, the defined boundaries on the land, where approved only for 906.4 thousand hectares of nature-protected areas (26 % of the total network of nature-protected areas), among them, those of national importance – 666,5 thousand hectares (13 %) and local – 239,9 thousand hectares (7 %). Documents certifying the right land use granted to 492,5 thousand hectares of nature-protected areas (14 % of the total area of protected areas), among them objects of national importance contribute with 456,1 thousand hectares (13 %) and local – 36,4 thousand ha (1 %). This is a prerequisite to illegal seizure of nature-protected lands. The facts, mentioned above, were discovered in the Crimea and in 18 regions of Ukraine, in 2013.

In addition, the prevailing practice is to create nature-protected areas without changing the land use practice, that means they remain in their primary land use status (mainly – forest areas, agricultural areas, water objects). Change of land use, while creating nature-protected areas, does not happen automatically. Taking as an example Kyiv region, we may see that in any case of creation of nature-protected areas there was no decision to change the land use practice of the land. Chapter 7 of the State Land Cadastre of Ukraine a separate category of land use is – “the land of nature-protected areas and other conservation practices”. However, in most regions of Ukraine nature-protected land category is not tracked by State Land Agency at all.

Solution for protected areas that will be created in the future, may be the introduction of legislative provisions that clearly specify what constitutes a project of creation of nature-protected areas (requires amendments to the Law of Ukraine “On Nature Reserve Fund of Ukraine”)

and provide mechanisms for financing the development of land use management projects of protected-areas during their creation, not after the final stage of delimitation of boundaries in the field.

Keywords: nature- reserve fund, the state land cadaster, environmental protection.

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Changes in chlorophyll content of herbaceous ornamental plants in soil contamination compounds of cobalt and manganese (p. 15–22)

O. Khromykh

The influence of heavy metals on the photosynthetic apparatus of plants is an independent and very urgent problem. Similar research is actively conducted in many laboratories around the world. However, differences in the types of plants, used salts of heavy metals, their concentrations and processing conditions lead to difficulties in comparing and summarizing the experimental material. In this regard, we studied the negative impact of soil contamination with compounds of cobalt and manganese content on photosynthetic pigments in seedlings of the studied species of herbaceous ornamental plants. The objects of our study were fifteen species of herbaceous ornamental plants. The research was conducted according to the scheme of full two-factor three-level experiment. Cobalt sulfate and manganese sulfate with a concentration of 0–3 g / kg of manganese and 0–10 mg / kg of cobalt were used as pollutants. The number of green pigments was determined by measuring the optical absorption of light in the solution at a given wavelength of light using a spectrophotometer. The data were subjected to statistical analysis by using two-factor analysis of variance. Comparison of average was carried out by the Danneta method. In terms of reduction of chlorophyll the most sensitive species are *Alyssum maritimum* Lam., *Dahlia variabilis* Desf., *Echinacea purpurea* L., *Linum usitatissimum* L., *Calendula officinalis* L., *Petunia Hybrida Grandiflora*, та *Phacelia tanacetifolia* L. Almost in all variants of contamination the reduction of chlorophyll a, especially in case of complex introduction of metal were detected. In all versions of pollution in seedlings *Agrostis*

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vulgaris there was an increase of chlorophyll content as compared with control plants. A positive trend of increasing concentration with increasing pigment concentration of pollutants was observed. In terms of reduction in chlorophyll content the most resistant species have been allocated: *Cosmos sulphureus* Cav., *Agrostemma githago* L., *Atriplex hortense* L., *Silene coeli rosa* L., and *Tagetes erectus* L. The analysis of the number of both chlorophyll impact cobalt and manganese ions indicates that contamination has a stronger effect on the content of chlorophyll *a*. Many more species of ornamental herbaceous plants studied appeared relatively resistant to the pollution indicator of chlorophyll *b* content. Rather resistant to the action of pollutants considering the chlorophyll content in seedlings appeared *Zinnia agnustifolia* H. and *Salvia splendens*. The most sensitive for chlorophyll content in seedlings appeared *Ageratum houstonianum* cv. *Bule Lagoon*, *Alyssum maritimum* Lam., *Dahlia variabilis* Desf., *Echinacea purpurea* L., *Linum usitatissimum* L., *Calendula officinalis* L., *Petunia Hybrida Grandiflora* and *Phacelia tanacetifolia* L. A possible decrease in the concentration was recorded in all variants of the complex action of heavy metal ions, especially at high concentrations of pollutants. Recent studies indicate the concentration of chlorophyll *a* in seedlings of ornamental herbaceous plants under soil contamination with compounds of cobalt and manganese changes, but these changes depend not only on the composition of pollutants, but also on the specific characteristics of the type.

Keywords: cobalt, manganese, stress, pigment complex, chlorophyll.

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The search of criteria for the determination of ecological safety of the pesticides utilization (p. 23–27)

Solomenko L., Drachenko V.

Considering the analysis of the literary sources concerning methodological instructions necessary to determine indices of possible danger caused by means of ecological plants protection, to the latter we can refer environmental danger of the pesticides that integrates such notions as ecotoxicity, phytotoxicity and the activity in the environment.

The carrying out of the complex ecological investigation is preceded by the search of the most informative and reliable criteria and the elaboration of the system of indices that would reflect the changes in the ecological condition of the soil in the most impartial way.

The aim of our investigation has become the detection of the regularities of phosphorganic pesticides impact on the vegetation metabolism in the chain of "pesticide–plant" interrelation, by the reaction of the latter it would be possible to distinguish the concentration of the xenobiotics dangerous for phytocenosis.

The object of our investigation has been defined as the determination of changes in the plants under the impact of phosphorganic pesticides both at the biological and ecophysiological level, namely the influence of different concentrations of the pesticides under investigation on the chlorophyll contents in the vegetative mass of the winter wheat.

It is agricultural phytocenosis that has become the subject of the investigation: the soil is typical light loam typical chernozem, winter wheat and phosphorganic pesticides: Caution fungicide Derozal of the systemic action (the activity substance Carbendazim) and averagely toxic systemic insecticide Bi-58 (the activity substance Dimethoate).

In order to determine the connection between the changes in the winter wheat metabolism and translocation of phosphorganic pesticides, the indices systems at the molecular (physiological processes) and ontogenetic (plants tolerance at certain stages of ontogenesis) levels of living organization have been applied. It has been established that in order to detect environmentally dangerous concentrations of pesticides, it is possible to suggest the study of the dynamics of the chlorophyll contents in the vegetation mass of the plants under the influence of these substances. It is necessary to determine the expediency of the obligatory pesticides utilization not only by their protective functions against vermin and illnesses but also by the possible impact on the quality of their products.

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Keywords: xenobiotics, phosphorganic pesticides, environmentally dangerous concentrations, phytotoxicity, chlorophyll.

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Tree diversity and condition of A.P. Chekhov Park stands in the town of Khartsyzsk (Donetsk region) (p. 28–31)

Ye. Suslova, D. Zadorozhnaya, L. Kharkhota

A.P. Chekhov Park in the town of Khartsyzsk is one of the newest parks in the south-east of Ukraine. The total area of this park is 28,8 hectares. Our aim was to survey the health condition of the park dendroflora. This survey was conducted by a route-visual method. We analyzed ecological and biomorphological features of plants, their dendrometric parameters. Dendroflora of the investigated parklands is represented by 82 species and forms belonging to 44 genera, 24 families. Such families as Rosaceae Juss. (18 species or 22 % of the total number of the species), Salicaceae Mirb. (10 species and forms or 12 %), Aceraceae Juss. (9 species and forms or 11 %), Oleaceae Hoffmanns. et Link (8 species and forms or 10 %) were represented by the highest number of the species. Plants belonging to Aceraceae and Oleaceae families are the most numerous (each numbering 15 % of the total plant number), and also those belonging to Fabaceae (14 %). The smallest number of plant specimens belongs to the families of Juglandaceae Rich. ex Kunth, Moraceae Link, Bignoniaceae Juss., Caprifoliaceae Juss., Anacardiaceae Lindl.

Woody plant species were grouped by their biomorphs that has shown the dominating number of trees (63 species and forms or 75 %). Such genera as Acer L. (7 species and 2 forms), Populus L. (5 species, 2 hybrids and 1 form), Tilia L. (4 species) were characterized by the highest species diversity. Such species as *Robinia pseudoacacia* L. (14,5 % of the total tree number), *Fraxinus lanceolata* Borkh. (12,3 %), *Aesculus hippocastanum* L. (6,9 %), *Quercus robur* L. (6,8 %), *Betula pendula* Roth (5,8%) were the most numerous among tree species.

Sixteen tree species and five shrub species are aboriginal (the ratio of aboriginal and introduced species is 1 to 3,9). Introduced species originate from Circumboreal region (20 species or 40 % of the total), from the North Atlantic (12 species or 24 %), from East Asia (6 species or 12 %), from Mediterranean region (2 species or 4 %), from the Iranian-Turanian region and the Rocky Mountains region (1 species). Eight species originate from several floristic regions.

The ecological analysis has shown an overwhelming number of mesophytes (73 %), heliophytes (58 %) and mezotrophs (69 %) among tree species; mesophytes (35 %), heliophytes (80 %) and oligotrophs (35 %) among shrubs.

The age structure analysis has revealed the presence of trees aged 7 to 80. The largest age group is that of trees aged 31 to 40 (31,5 % of the total trees present). The study has shown that there are old trees of unusually large size and older than 70 years. We also registered

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the oak tree grove with trees aged from 40 to 80-years, *Quercus robur* being an aboriginal hardy species. Among shrubs there is the most numerous age group of 11- to 15-year-old, making 31 % of the total.

Viability of a most trees was assessed as 6 points at a viability scale (38.3% of the total) and 7 points (27 %). As much as 2,6 % of trees are in critical condition (1–3 points) and 1,4 % is a dry wood which needs to be removed. The presence of old trees is valuable and significant in some species which in urban conditions lose their appearance at this age and almost never occur.

Keywords: trees, shrubs, age, viability.

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Ecomorphic and spatial organisation of the urbanozem mesopedobionts (p. 32–41)

Kunah O., Zhukov A., Baljuk Ju., Fediushko M. The results of studying of the spatial organization of soil mesofauna of the urbanozem of the grassland within artificial forest planting have been processed by OMI- and RLQ-analysis methods. Researches are spent to June, 10st, 2012 in Oles Gonchar University botanic garden (earlier – territory of park of J.Gagarin, Dnepropetrovsk). The studied plot is situated on the Krasnopostachekaya balka valley slope (48°25'56.76"C, 35°2'18.74"B). The plot consists of 15 transects directed in a perpendicular manner in relation to the talveg. Each transect is made of seven sample points. The distance between points is 2 m. The coordinates of lower left point have been taken as (0; 0). The plot represents artificial grassland with single tree. The vegetation has typically forest mega-mesotrophic xeromesophilic character. In each point the soil mesofauna was studied (data presented as L-table); temperature, electrical conductivity and soil penetration resistance, and herbage height were measured (data presented as R-table).

Soil-zoological test area had a size of 25×25 cm. The soil mesofauna gave been found as being presented by 26 species and with total abundance 234,47 ind./m². In ecological structure of the soil animal community have been found such groups dominant as saprohages, pratants and paludants, gygrophiles, mesotrophocoenormorphes, endogeic and epigeic topomorphes. The measured edafic characteristics have been shown to play an important role in structurization of an ecological niche of mesopedobionts community. The usage of morphological or physiological features of animals for an estimation of degree of specific distinctions is applicable for homogeneous taxonomic or ecological groups possessing comparable characteristics which also can be interpreted ecologically. The soil mesofauna is characterized by high taxonomic and ecological diversity of forms and comparing which by morphological or physiological criteria it is rather inconvenient. Ecological sense of characteristics in different groups will be not identical, and the basis for their comparison will be inadequate. Therefore we apply to the description of ecological features ecomorphic analysis of soil animals. The organization of communities of soil animals may be considered at levels of an investigated point, a biogeocenosis, a landscape and regional level. Actually, on the basis of landscape-ecological distribution of species in ecological space their accessory to ecological groups – an ecomorphes is established. The regular ratio an ecomorphes in these functional groups will be reflexion of their organizational structure and an ecological diversity. The obtained data testifies to justice of the come out assumption. It is important to notice that fact that the functional groups allocated in ecological space by means of the RLQ-analysis, show regular patterns of spatial variability. Local functional groups are characterized by ecological characteristics which reflect in terms one ecomorphes of property of others, occupying higher hierarchical position. Ascertaining of spatial heterogeneity of the animal community and determinancy of properties of an ecological niche by soil factors is important result however for understanding of the nature of heterogeneity the spatial variant of ecomorphic the analysis with RLQ-analysis application has been processed. Within comparatively uniform field the spatial differentiation of the animal community on functional groups has been found. The reality of their existence proves to be true not only statistically, but that is especially important, substantial interpretation of ecomorphic markers of groups interrelation and indicators of ecological properties of soil as inhabitancies. The variation of environmental properties within microsities leads to rearrangement of ecological frame of the soil animal community. Heterogeneity of a

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soil body and vegetation mosaic form patterns of the spatial organisation of the soil animal.

Keywords: soil mesofauna, ecological niche, spatial ecology, ecomorphes.

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Creation of wildlife sanctuaries in disturbed with mining works lands as approach of forming the connected elements of ecological network (p. 42–45)

A. Shapar, O. Skrypnyk

Technological landscape reserves creation provides secondary ecosystems formation conditions, which are the basis of secondary biodiversity. The reserve "Vizirka" created a unique man-made terrain variety. Secondary biological and landscape diversity develops on its basis. Formation of rare plant species habitats continues during 10 years by the methods of the seed reproduction, micropropagation and transplanting seedlings. Blackthorns planting are carried out to stop water erosion. Restoration of *Pedunculata oak*, *Walnut*, *Crimean pine*, *Sea-buckthorns* was carried out at the dumps slopes. *Stipa capillata* restoration carried out with sod usage on a dump plateau № 9.

Modern GIS-technologies usage for monitoring, design, data visualization in the form of graphic documents can improve the efficiency of secondary ecosystems formation. GIS-technologies usage allows creating digital elevation model on the morphometric data basis for any site terrain. They also allow carrying out its spatial analysis. Hydrographic network terrain system, zoning by the slope gradient are created in the automatic mode and, also, the sites with the erosion hazard, which are the econet formation basis, are detected. Satellite imagery allows identifying areas with natural ecosystems (forests, pastures

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and hayfields) and wetlands, that can help to include them to the ecological network elements. Usually, the image quality allows defining ecosystems condition, moisture conditions and other abiotic parameters. Man-made landscape reserves, which are created on the disturbed by mining operations lands, are the main reserve for the construction of the ecological network connection elements for the industrial regions of the Ukrainian steppe zone.

Necessity justification of the secondary ecosystems protection, landscape and biotic diversity protection allowed granting legal status to the local landscape reserves territories "Vizirka" on the Inhulets ore processing plant lands, "Vershina" on the Prosjanskij Mining lands, landscape reserve of national importance "Bogdanovskij" on the Ordzhonikidze Mining lands, "Grushevka" on the Marganets Mining lands.

Keywords: man-made landscape reserve, formation of secondary ecosystems, ecological network connection element.

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The role of light structure stands Biosphere Reserve "Askania Nova" in shaping dendrophilous avifauna in the reproductive period (p. 46–50)

M. Listopadsky

Work was carried out on the territory of the Biosphere Reserve "Askania Nova". Object of study – forest birds. Forest plantations in the reserve all artificial. This park, village and forest strip. They formed the population of birds. The laws by which the settlement occurs birds of these forests – the main task of the study. Forest ecosystem is a group of factors. They operate on different birds. In this paper we consider the role of such factors as light. Bird census was con-

ducted in the spring and summer. Studied only those birds that inhabit the forest of artificial. In accordance with the doctrine of artificial forest steppe, we selected five lighting options. With respect to each of them, we studied the number of each species of birds. The study found what variant illumination prefers one or the other species of birds. Thus, we learned what kinds of birds in the forest light is a positive or negative phenomenon. What type of lighting is most fond of a particular species of bird. We learned that light helps to establish two community forest bird. These are the kinds of forest and steppe origin, as well as only forest. Marked species that are tolerant to light. For them, the light in the forest is not important. Birds that live in the trees and have a small body – the most sensitive to light. In spite of this, the darkest parts of the forest are not yet fully populated with birds. Here you can expect to see new species of birds and increase their numbers. On the contrary, in light of artificial forests of free living space is left. Here bird fauna is full and will not change.

Keywords: dendrophilous avifauna, forest ecosystem, light structure, group of factors, phenomenon.

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ABSTRACTS

Particularities of propagation of the representatives of *Berberis* L. family in the setting of the Botanical garden of Oles Honchar Dnipropetrovsk National University (p. 51–53)

O. Bobrova, Yu. Lykholat, Yu. Lesko

In modern times plant introduction solves paramount problems of genetic conservation and biological diversity of natural wildflower, including adornment species of plants valuable for cropping. In the course of introduction work it is necessary to assess its success on the basis of reproductive power of reproducible plants. The particularities of propagation by seeds and vegetative propagation of the species of *Berberis* L. family have been studied in the setting of the Botanical garden of Dnipropetrovsk National University. Quality of seeds and germinating capacity in particular supplement the total characteristic, defining qualitative aspect of the actual seed productivity. Examined species of plants differed according to their indexes of germinating energy and germinating ability of seeds. The species occurring in European, Central Asian, and North Chinese natural areas had high germinating energy and germinating ability of seeds. The method of propagation by herbaceous cuttings, which provides an opportunity to reduce the term of standard seedling production, offers the great challenge for faster propagation of valuable adornment plants and production of top-grade planting material. The species within a family demonstrate different capacity for propagation by herbaceous cuttings. The growth stimulators (fumar, epin and kornevin) enhance root formation of herbaceous cuttings. *B. polyantha*, *B. amurensis*, and *B. Coreana* naturally occurring in European, Central Asian, West Chinese, and Korean areas demonstrated the best result under the influence of biostimulators. The species with high, medium and low degree of root development were distinguished.

Keywords: barberry, propagation, stimulators, seeds, emergence of seedlings, sprigs, root formation.

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General characteristic of ichthyofauna of protected aquatories of small and middle rivers of Dnipropetrovsk region (p. 54–59)

V. Kochet, A. Zubkova, N. Cherednik

Modern Ukrainian statehood development strategy provides for the integration of all its components in the institutions of the European structures. Under this strategy, Ukraine has ratified all the most common in Europe and worldwide convention for the conservation of rare species of animals, including fish. This List of International Conservation of Nature (IUCN), the Berne Convention, the Ramsar Convention. Adopted domestic security lists: Red Book of Ukraine, Dnipropetrovsk region Red Book. In the above context, the aim of the present study was to conduct an inventory summary of the ichthyofauna of small and medium-sized rivers Dnipropetrovsk region over the last thirty years, to identify the main patterns of distribution and distribution of fish over a network of protected areas reserved. Complex ichthyological studies were conducted from 1983 to 2013. the waters of the largest small and medium rivers tributaries. r. Dnipro (Dnipro reservoir): r. Samara, r. Wolf, r. Orel, r. Mokra Sura, r. Ingulets, r. Bazavluk, as well as the offshore reservoirs constructed within the boundaries of their waters.

These studies established the following.

Summary list of fishes of small and medium-

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sized rivers are 55 species of 58, set in the Dnipropetrovsk region. Thus the widespread belief of complete degradation of the fish community of small and medium-sized rivers are extremely exaggerated. Small and medium-sized rivers also continue to play a crucial role in the conservation of rare and endangered species of fish in Ukraine, Europe and the world in general. Within the reserved waters identified 24 fish species (44 % of total species), having an international protection status (IUCN, Berne Convention, the Ramsar Convention). It lists the Red Book of Ukraine and Red Book of Dnipropetrovsk region holds 19 species of fish. Determined that the major role in preserving the original and rare fish fauna play open waters of small and medium-sized rivers with an area of open mirror 75 % and above as well as small and medium-sized reservoirs located on these rivers. Here identified 45 of the 55 recorded species (83 % of total vidovgo of fish).

It was established as a result of adaptive processes occurring in areas of direct intensive pollution in particular mine waters inhabited by fish, with an international, domestic and regional conservation status: char mustachioed (*Barbatula barbatula* L., 1758), river burbot (*Lota lota* L., 1758) ordinary minnow (*Gobio gobio* L., 1758). Revealed that more than 50 % of the species composition of fish that have protected status, live within the boundaries established loklitetov not singly, but show the numerical parameters are more inherent mass typical species.

A concept of the conservation of rare species in the region, which is as follows. In the absence of the ability to effectively protect rare species from the state, the optimization process of preservation of rare and endangered species should be based solely on scientific managing economic and recreational activities in the leased waters. Moreover, experience shows in favor of educational outreach to tenants in the context of very high prestige preserve fish with conservation status, living in rented their reservoirs.

Keywords: species composition, fish fauna, small rivers, ecological condition, protected status.

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The role of xylophagous beetles in beech natural forests and virgin forests (p. 60–64)

H. Izhyk, A. Mateleshko

Primeval ecosystems of the Carpathians have versatile natural and scientific, eco-educational, standard forest and landscape-aesthetic value. They are the natural models for renaturalization of the transformed forest stands and forest management according to the example of close-to-nature forestry.

Coleoptera in virgin forests and natural forests occupy different ecological niches, meeting in the composition of various environmental groups. The positive role of xylophagous insects in forest ecosystems is their active participation in the cycle of organic matter, which greatly exceeds the role of individual species as pests.

In undisturbed forest ecosystem xylophagous insects perform an important role by processing bark and wood drying during natural rainfall trees and thereby expediting the return to the soil of necessary minerals.

Xylophagous insects in beech virgin forests are involved in the refinement and expansion of dead wood, accelerating natural forest cleaning of dead wood. They feed by the larvae of insect herbivores, so there is a natural pest regulation of forestry.

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Taking into account the scientific, natural, forestry significance of primeval ecosystems their protection need to be supported within the frame of nature protection fund.

Keywords: Coleoptera, virgin forest, natural forests, dead wood, biodiversity, beech.

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ABSTRACTS

The spread of alien species of *Vallisneria spiralis* in the waters of Northern Steppe Dnieper (p. 65–68)

N. Voloshina

Introduction. The Tape grass (*Vallisneria spiralis* L.) – one of the most famous adventive subtropical species that is widely distributed in the European water bodies. The aim of the study was to trace the distribution characteristics of Tape grass in the steppe Dnieper reservoirs century with regard to its findings of this species.

Materials and methods. The research was conducted the general botanical and special hydro botanical collection methods, herbaryzation and species identification. There were analyzed the literature data on this subject for the last hundred years. The distribution of plants in ecosystems of varying degrees of anthropogenic transformation reflect according to the classification of ecosystems, Blume, and Sukopp that based on the concept of “hemeroby” i.e. transformation of ecosystems. It used six degrees of hemeroby in intensity of anthropogenic influence: ahemerobs, olihoemerobs, mezohemerobs, euhemerobs, polihemerobs, metahemerobs.

Results and discussion. The Tape grass is widespread in the waters around the globe, especially in the tropics and subtropics. The area of *Vallisneria spiralis* in the first half of the twentieth century, covering the Mediterranean, Eastern and Southern Europe, much of Asia, sub-Saharan Africa, North America. Later, its range expanded to almost cosmopolite with disjunctive character.

In Ukraine until 1940, in the steppe zone it met sporadically in Poltava, Kharkiv, Dnipropetrovsk, Mykolaiv and Odesa regions. The appearance of Tape grass in the waters of Northern Steppe Dnieper first noticed Akinfiyev I. (1889). It is possible to assume that already Ekaterinoslav developed aquaria and *Vallisneria* could get into the Dnieper from aquaculture. In subsequent years, the area of *valisneria* within Steppe Dnieper gradually extended, mainly due to construction of reservoirs and the formation of new shallow water.

Over the last five years, we have found four location of of Tape grass in the waters of the Steppe Dnieper. In these reservoirs *Valisneria* grows in places with small depth (0,5–1,5 m) on sandy and silty-sand bottom sediments and forms a monodominat dense phytocoenoses or is dominant in communities of submerged plants.

The conclusions. The Tape grass is an indicator of accumulative-erosion weakly-humus zones and freshwater, brackish and little flowing waters. Thus, over the last century *Vallisneria spiralis* has a tendency to slow but steady distribution in the steppe Dnieper reservoirs. Its spreading farther North caused the creation of reservoirs, including reservoirs-coolers.

Vallisneria spiralis in the hemeroby system corresponds to the category mezoeuhemerobs (MsEuHr), ie, it occurs only in areas which is an anthropogenically modified and are under anthropogenic impact.

Keywords: *Vallisneria*, adventive species, reservoirs, Northern steppe Dnieper.

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Rare plant diversity of the econet of steppe zone of Ukraine: representation and analysis (p. 69–72)

D. Dubyna, P. Ustymenko, L. Vakarenko

The creation of econet for the steppe zone of Ukraine is urgent and immediate environment protection due to its geographical location and extraordinary transformation of its ecosystems. It units to single integrated system reserve fund in this region, fragmented remnants of natural vegetation, makes conservation of storage biotic and landscape diversity, rare plant fund, ensures restoration of degraded vegetation plots and repatriation of lost species of plants and animals.

The aim of the research is to elucidate rare plant species and plant communities of vegetation representation in the econet listed in the Red Data Book of Ukraine (2009) and Green Data Book of Ukraine (2009) and make their zoological analysis. The research is based on generalized critical factual material by authors and literatural data. Research has been conducted by traditional field and cameral geobotanic methods.

It has been established 162 vascular plants species from the Red Data Book of Ukraine are present in the econet of the steppe zone elements. Life forms analysis of the distribution of rare plant species in the econet of the steppe zone elements is similar to the one in the whole steppe zone. Hemicryptophytes (69 species) are dominated. It has been found predominant families are Fabaceae, Poaceae i Orchidaceae, which comprise 17, 18, 14 species respectively. Spectral analysis of zonal chorological groups of rare species has shown the prevalence of temperant-submeridional type (80 species). The distribution of regional chorological groups has

shown the predominance of european (52 species), Black Sea coast (45) and Eurasian (21) types. Ecological analysis has shown the predominance of xerophytes (56 species).

It has been established rare plant communities diversity of econet of the steppe zone includes 312 associations and 47 formations. Among the types rare steppe vegetation are dominated. It has 155 rare association. Plant communities of 15 rare associations are characterized by a unique association type of dominant species, 130 ones – rare type, 167 – usual. It has been found 208 associations formed by various layers dominant species from the Red Data Book of Ukraine, 41 – from IUCN Red List, 54 – from European Red List.

The comparative analysis of taxonomical, ecological and geographical structure of elements of econet of the steppe zone rare plant species has shown their close resemblance to this analysis in the whole region. Rare plant communities have been marked by rare and usual association types of dominant species, the narrow spread with low concentration in places of the distribution (mostly within forest and steppe communities), inactive character of changes in the current range of soil and climatic conditions, poor or very poor natural regeneration.

Keywords: steppe zone, econet, rare plant species diversity, rare plant community diversity.

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Mathematical design at a research of corn and wheat stability to the combined action of drought and herbicides (p. 73–76)

A. Rossikhina-Galicha, Y. Lykholat, O. Vinnichenko, Y. Grican

There were obtained the regressive relations of superoxide dismutase activity shift module to variation at three factors levels on the example of two factors combined effect – osmotic pressure (simulated drought) and herbicide frontier on the wheat and corn sprouts through the root area – within the scope of full two-factor laboratory experiment. The correlating with enzymatic activity estimates of the investigated plants resistance index to the exogenous factors impact were obtained.

The target response surface, described by the obtained regress equations relatively to the combined factors effects consists of straight lines because these equations become linear ones at any fixed value of P or C , at that there is a characteristic feature – a high sensitivity of investigated test objects to drought effect in comparison with herbicide.

The entire response surface is curvilinear, because the equations contain compounds 0,15 PC (corn) and 0,46 PC (wheat) which determine interaction effect of P and C factors. The influence of one of co-operating factors on plants resistance can be characterized with indication of another factor level if such interaction exists. One of the most real hypotheses, concerning a biological essence of the P and C factors interaction effect, is the following. The compound and ions concentration in cells, including H^+ , change under the influence of P factor, the processes of the ions cell leaving become facilitated. The membranes and localized H^+ pumps within them become deformed under the influence of the C factor, which causes penetration of herbicide into the plant rootage cells. At that, the rootage secretory activity and pH of incubatory medium change. The studying of the P and C factors interaction effect was performed with measurement of pH *in vitro* due to problematical character of shift module pH ($|\Delta pH|$) registration in subcellular parts *in vivo*.

The enzymes activity, especially SOD, which carry out a cell metabolism regulation, i.e. its biochemical processes, change under the influence of ionic composition and concentration of H^+ ions changes in the cells. It is connected with

the presence of acid and basic groups, which take part in catalysis, in the active enzymes centers. The cytocinesis and tension decelerate if the abovementioned changes in the cells go beyond the bounds of the plant resistance relatively to the influence of P and C factors. The deceleration dynamics depends on the level of the investigated plants resistance to the studied factors effect.

The obtained results confirm the necessity of the soil herbicides inhibitory effects accounting in the course of the grain crops drought resistance estimation. The presented interpretation alternative of the interaction effect biochemical essence, revealed in a result of the investigated process mathematical modeling, creates prerequisites for perfection of methodological maintenance of the grain agricultural plants potential drought resistance researches in selection and introduction practice.

Keywords: drought, herbicides, superoxide dismutase, wheat, corn, sprouts, daofactory experiment, the sustainability index.

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The features of technozems aggregate structure changes on a profile (p. 77–81)

I. Ljadzka

Through years of research and recultivation of lands Nikopol manganese ore basin disturbed by mining industry a lot of information body have been accumulated about the soil formation processes in rocks under their biological development. Aggregate structure of the sod-lithogenic soils has been known as significantly changed under the influence of different factors. Aggregate structure of the soil is an important characteristic which determines its environmental and agronomic functions. Technozems types specific statistical structure have been assessed by method of dry sieving features of aggregate structure distribution by layers in the following types technozems the Nikopol manganese ore basin: pedozems, sod-lithogenic soils on gray-green clays, on red-brown clays and on loess-like loams. The general assessment of a technozems condition have been made on the basis of soil structure. By means of the cluster analysis of results of research have been defined that in all types technozems distribution of fractions on the horizons can be allocated the homogeneous groups similar on the distribution on layers. The top horizons have been established to be higher maintenance of fractions by the size from < 0,25 to 5-3 mm and in the bottom horizons the maintenance of fractions from 3-5 to 10 mm have been found as being dominated. The possible reason of is that when designing binomial technozems models the condensed layer is formed when using heavy motor transportation machinery for drawing a fertile layer of soil weight, especially at high rates of humidity of substrata. Also the reason for such a distribution of soil aggregates can be biotic processes due to activity of soil fauna, development of plant roots, and natural phenomena such as freezing - defrosting of the soil.

Keywords: recultivation, aggregate fraction, soil structure coefficient.

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About the studying of the nesting sites of *Xylocopa valga* and *Ceratina chalybea* bees in the South-Eastern Ukraine (p. 82–86)

A. Amolin

The main aim of this paper was to characterize the nests of two apidea species *Xylocopa valga* Gerstaecker (1872) and *Ceratina chalybea* Chevriier (1872), subfamily Xylocopinae, within the south-eastern Ukraine as well as to reveal some aspects of their nesting sites.

The study has been carried out from 1996 until 2013 in the territory of Donetsk and Lugansk regions. The chief method of study involved searching the nests of the species in different landscapes of the territory under research and description and photography of nesting sites. To study the nesting sites of *Ceratina chalybea*, artificial nests were applied – sheaf of dry pieces of raspberry and black elderberry stalks. Totally, there were 5 nesting sites of *Xylocopa valga* studied and no less than 20 nests of *Ceratina*

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chalybea collected during the period of study. Among all the species of this genus, *X. valga* is the largest in number and has the broadest distribution in the south-eastern Ukraine. In natural conditions *X. valga* build nests in dry wood (such as dead and dying trees, roof rafters, wooden pillars), gnawing the wood. Moreover a fact of building a nest in the empty cavity of the reed (nестe-trap) was described (Ivanov, Fateryga, 2005). We observed nests building in dead but not fallen trunks of different trees (*Malus sylvestris* Mill., *Pyrus communis* L., *Salix* sp., *Quercus robur* L.), *Ceratina chalybea* [syn. *C. callosa* (F.)] is one of common and widely spread in the south-eastern Ukraine. Ecologically Thamnobiont and chortobiont are closely associated with the herb and shrub layer. The nests of *C. chalybea* were detected in dry stalks of herbaceous plants (*Salvia aethiops* L., *Helianthus annuus* L.) and bushes (*Sambucus nigra* L., *Rubus idaeus* L.) of different biotopes. The nest buildug of this type was observed in peculiar sites, common for steppe landscapes – dry embryophytes such as tumbleweed (in particular, in stalks of *Salvia aethiops*) as well as in artificial nests (bundles of pieces of dry raspberry stalks).

Keywords: the nesting sites, *Xylocopa valga*, *Ceratina chalybea*, South-Eastern Ukraine.

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Objects of Geological Heritage in Natural-reserved Fund of Ukraine (p. 87–90)

V. Manyuk

During the long history of the development of the movement for the conservation of valuable natural heritage sites there has been an unchanged tendency towards increased attention to wildlife as opposed to objects of inanimate nature or geology. Important geological sites have either gone unnoticed, been ignored or simply been excluded from their deserved inclusion in the nature reserve structure. This is a general trend which concerns not only Ukraine but the rest of the world. Nevertheless, the geological component is one of the most important components of the natural environment and is no less important than the other components.

The main purpose of this study is to examine the tendency to recognise the importance of the conservation of the geological heritage both at the European and at the world level. Following the creation of the European Association for the Conservation of the Geological Heritage (ProGEO) the concept of geodiversity became firmly established, alongside that of biodiversity, in the practice of conservation in Europe and, later, the world. Drawing on the examples of various countries we have examined the historical background to the issue of the conservation of unique geological heritage sites or geological monuments (geosites). We have focused our attention upon the clear successes of the Ukrainian representatives of ProGEO, which in cooperation with the Ukrainian Department of Geology and Mineral Resources has conducted a survey, inventory, catalogue and created a database of natural geological monuments, resulting in the publication of the four volume monograph, "Geological Monuments of Ukraine".

An important step towards the recognition of the importance of the geological component in the formation of the Nature Reserve Fund of Ukraine has been the active cooperation between members of the Ukrainian Department of Geology, ProGEO and the Department for Ecology and Natural Resources in Dnipropetrovsk region (oblast) for identifying suitable sites for inclusion in the Nature Reserve Fund of that region. The result of this collaboration was the rapid adoption and confirmation of the decisions of the Dnipropetrovsk Regional Council for the designation of new regional landscape parks, nature reserves of various categories and natural monuments.

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Keywords: geological monument, geodiversity, ProGEO, geological environment, inanimate nature, Natural-reserved Fund.

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Pedofaunal Cadastre as Guidelines for Assessing Soil Bioresources (Priamurje Invertebrates as an Example) (p. 91–95)

G. Ganin

The paper proves the practicality of the Pedofaunal Cadastre as a part of the Soil Cadastre. Taking invertebrates of the Russian Far East south as an example the author discusses the possibility of assessing bioresources of soil animals. The paper also presents comparative data on species diversity and environmental parameters of mesopedobionts from the southern taiga of the Russian Far East.

Soil inhabitants support the biosphere balance

and being included into many trophic nets are potential bioresources and as such were always considered to be key research topics. Nearly 98 % of all terrestrial animals of the southern Russian Far East are invertebrates, and the life of most of them to a greater or less extent depends on soils. Still only 10 % of invertebrate species of all size-groups permanently live in soil. Soil mesofauna of the region under study is taxonomically represented by 5 types, 11 classes and 1550 species from 80 to 2600 species/m² in number, making 40 % of total biodiversity of pedobiont animals. 35-70 % of total pedobiont zoomass belong to mesopedobionts, which having prevailing biomass and productivity ecologically dominate in the soil horizon. This fact determines biocenotic value of mesopedobionts in terrestrial ecosystems.

Up to now biotopic correlation has been fixed for 840-850 species, many of which are endemic. At present taxonomic groups of studied phytocenoses are described as follows: Tricladida – 2, Nematoda – 1, Annelida – 32 (Megadrili – 12, Enchytraeidae – ~20), Mollusca – ~80, Diplopoda – 68, Lithobiomorpha – 20, Geophilomorpha – 21, Crustacea – 10, Aranei – 199, Opiliones – 13, Dermaptera – 4, Blattodea – 1, Diptera – 47, Carabidae – 141, Staphylinidae – 148, Elateridae – 37, Curculionidae – 42, Scarabaeidae – 7, Chrysomelidae – 3, Silphidae – 6. Species composition and number of pedobionts in soils of mixed, dark and light coniferous forests and forest-steppe zones are presented in the Pedofaunal Cadastre.

Mesofauna of mixed and broad-leaved forests is the most diverse. 623 invertebrate species have been registered here by now. Inhabitants of mixed forest phytocenoses that are trophically dependant on leaf-litter make 70 % of native fauna communities. Although dark coniferous forests occupy a relatively small area they are distinguished by a significant variety of pedobionts (241), whereas light coniferous forests are less species (186 species). Of the open habitats, steppe meadows are the most species (102 species), followed by dry meadows (75 species), wetland meadows (63 species) and swamps (24 species). In the southern Far East the maximum mesopedobiont biomass values (26–39 g/m² in sub-zones on average) are registered in the zone of mixed and broad-leaved forests. In other plant zones of the region biomass reserves are much lower (4–10 g/m²). In the intrazonal biotopes the values are average (9–19 g/m²). In general, in the southern Far East larger pedobionts make 35–70 % of the total zoomass of pedocenoses. A “southern” character of the structure of soil fauna here is evident. It is usually specific to forest ecosystems of a nemoral type. Biomass of a saprotroph complex (earthworms, diplopods and mollusks) is about 85 %, whereas that of

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predators of all larger pedobionts is only 5–6 %. The same specific feature is found typical to the southern taiga of the Russian and West-Siberian plains, which has common genesis with the Far Eastern taiga. However, in the northern and middle taiga predators make over 50 % of biomass of all larger soil invertebrates.

Our inventory permits us to have a notion of the present condition of pedobionts on the protected and developed territories, and tends to suggest which species need protection, also bioindicators. The Pedofaunal Cadastre should enter as an integral part into the Soil Cadastre and pedobionts should be, in addition, evaluated as a biological resource.

Keywords: soil invertebrates, mesofauna, bioresource, biomass, soils, Priamurje, Far East.

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Protection of rare species *Paeonia anomala* L. in the Southern Urals (p. 96–101)

A. Reut, L. Mironova

In article results of the study of introduction of a rare species of flora Bashkortostan *Paeonia anomala* L. on the basis of Botanical Garden-Institute, Ufa Science Centre. In the republic known reliably 7 points his whereabouts. The total number of recorded species does not exceed 1000 copies, so needed re-introduction events. In connection with this introduction as a method to preserve rare species of local flora becomes relevant. The purpose was to study the biological characteristics of *P. anomala* in the conditions of introduction to conservation of genetic diversity of the South Ural populations. Of introduction of research conducted on the plots of the collection area peonies Botanical garden in

2005–2013 years. Agronomical actions include weeding, hoeing and watering as needed. The following are details of phenological observations, biometric indicators and elements of the form of seed productivity in culture and in vivo growth. The problems of the expanded reproduction of *P. anomala* using plant growth regulator *Biodux*. Single treatment of *P. anomala* in spring regrowth phase has significantly intensify physiological processes in plant cells, which led to a significant increase (in 1.1–1.9 times) almost all studied parameters biomorphological (40 of 43). The estimation of success of the introduction of *P. anomala* in the forest-steppe zone of the Bashkir Urals on the complex biological and economic characteristics. Scores obtained allowed him to carry the species are highly resistant. Introducents of this group of winter-hardy and drought-resistant, and regular mass bloom, fruit, give the unit self-seeding, are not affected by diseases and pests. The studies on the basis of Botanical garden created uterine mass plantation for seed and planting material to be used in subsequent re-introduction works.

Keywords: *Paeonia anomala*, biological features, introduction, productivity, growth regulator *Biodux*.

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Waste water from hotel-restaurant complex as a potential threat to biodiversity of aquatic ecosystems (p. 102–105)

L. Shevtsova, L. Bereza-Kindzerska

Analysis of hotel-restaurant complex wastewater was studied on the example of chemical composition of wastewater JSC "Hotel "Lybed'" situated in Kiev during 2007–2009. We determined the following parameters: dry residue content of suspended solids, sulfates, chlorides, phosphates, ammonia nitrogen, total iron, fat, anionic surfactants (devi) and chemical oxygen demand (COD) and pH water (pH).

Indicators of pollutants in wastewater discharged to the collectors of restaurant and household use does not exceed the corresponding MAC approved in Acceptance wastewater sewer system companies in Kyiv. The dry residue in household water were in the range of 567–596 mg/m³, restaurant – 551–637 mg/m³. Number of suspended solids was not lower than 150 mg/m³. Indexes of the content of sulfates and chlorides in the hotel-restaurant complex' return water was below their MCL. Wastewater both household and restaurant include a significant amount of ammonia nitrogen, phosphates and organic substances. COD index that characterizes the content of organic matter in the water was 1,9 times below the MAC, but 15 times higher than in highly polluted natural waters. Anionic surfactant content in restaurant and household wastewater dumped into municipal sewer does not exceed 5

dm³, and fat – 27 dm³.

Dependence of chemical parameters on the amount of drainage water for months found no clear dependence.

Devi, soluble forms of nitrogen and phosphorus, organic matter most polluting freshwater ecosystems. They change the surface tension, reduce the content of dissolved oxygen, causing algal blooms, foaming and increase turbidity, lead to pH changes and salt content, adversely affect the livelihoods of aquatic organisms.

To prevent contamination of aquatic ecosystems by hotels and restaurants drains it is required to clean up wastewater before they getting to the central sewage drain/ It is necessary to install new sewer autonomous, self-contained sewage treatment plant (eg. grease, mesh filters, etc.) or use biological products.

Keywords: waste water, chemical compound, hotel-restaurant complex, water removal volume, biodiversity

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Features of accumulation of waste and ways of processing in the Vinnitsa region (p. 106–109)

O.Tkachuk, S. Gusak

For Vinnichina is an actual problem of industrial and domestic waste.

In preparing the article the materials of the Main Department of used Statistics in the Vinnitsa region on the accumulation and disposal of waste; Concept of National waste management program for 2013–2020 years. Also were used methods of research analysis and evaluation.

In Vinnitsa region during 2012 was formed 3132604,8 tons of waste. 71 % of these belong to the animal and plant. They are easily decomposed by decomposers to inorganic

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compounds and are not dangerous for the environment. They are easily decomposed by decomposers to inorganic compounds and are included in the circulation of substances and pose no risk to the environment. Of the total number of animal and plant waste – 2034127,8 tons, only 34 % and 2 % recycled burned for power.

The share of waste combustion accounts for 15 % – 466699,6 tons basic amount of waste belongs Ladyzhyn TPP and presents ash-slag mixture. The share of mineral waste is 8,3 % – 259572,1 tons, waste of household and similar is 4,2 % – 130502,9 tons

Of the total number generated waste 27,3 % is recycled and recyclable, and even 1,4 % is burned to produce energy. Not including animal and vegetable waste, most processed conventional sediment – 1440 tones, representing 0,17 % of recycled waste and 5,13 % of the precipitate formed, waste combustion – 1421,6 tons, which is 0,17 % of waste recycled and 0,3 % of the total generated waste combustion.

Share of waste burned for energy, is 1,4 %. In addition to animal and vegetable waste, 11,5 % of the burned waste accounts for waste wood, which thus recycled 77,5 % of waste generated in this group.

In period from 2010 to 2012 years, the number of generated waste in the Vinnitsa region has increased by 1,7 times, but the proportion of waste I – III hazard class decreased 1,4 times. The number of reclaimed and recycled waste increased by 19,6 % and reduced the number of waste in designated areas by 16,3 %.

In Vinnitsa region combustion, mineral and household wastes are the most dangerous. This requires their broader utilization and recycling. The issue of household waste, especially in the regional center, begins to resolved, while ash-slag waste Ladyzhyn TPP utilized and processed back in insufficient quantities, requiring more intense action in this area.

Keywords: accumulation of waste, recycling, ash-slag waste, mineral waste, household waste.

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Herpetobiont arachnids of a beech forest (Transcarpathia) (p. 110–114)

E. Prokopenko, V. Chumak, T. Lachat

Samples were taken by Barber's pitfall traps during the field seasons 2011 and 2012 in environs of Vugilka (Tjachevsky district, Transcarpathia, Carpathian Biosphere Reserve). 20 sampling plots were located: 1) under beech forest canopy, 2) in the centre of a glade and 3) in a forest edge. Each plot was contained three pitfall traps. The general exposition of traps has made 15532 trap-days. 14298 individuals of herpetobiont arachnids (including 349 individuals of pseudoscorpions, 3423 individuals of harvestmen and 10526 individuals of spiders) have been collected and defined.

66 species of spiders, 10 species of harvestmen and 3 genera of pseudoscorpions were found. *Acantholycosa lignaria* (Clerck, 1757) and *Zelotes erebeus* (Thorell, 1871) were registered in Ukraine for the first time. Following families of spiders and harvestmen were characterized by the greatest number of species: Linyphiidae (25 species), Lycosidae (9 species), Gnaphosidae (8 species), Agelenidae (5 species), Nemastomatidae (3 species) and Troglidae (3 species). The species richness of spider fauna in all biotopes differed slightly: 49 species were registered in the glades, 48 species – in the forest edges and 46 species – under the wood canopy. Differences in taxonomic structure of harvestmen and pseudoscorpions weren't found.

The greatest level of the arachnid dynamic density was noted in the glades – 86,3 individuals/100 trap-days. The arachnid dynamic density showed the consecutive decrease in the forest edge and under the forest canopy – 71,5 and 61,7 individuals/100 trap-days, accordingly. The increases in species richness and dynamic density of spiders in open grassy biotopes in comparison with the sampling plots under the forest canopy were noted. Harvestmen were characterized by the maximum dynamic density in the glades. Pseudoscorpions were more abundant in the shaded forest habitats and in the forest edges. All biotopes weren't differed on taxonomic structure of harvestmen and pseudoscorpions.

Key words: arachnids, fauna, beech forest, Aranei, Opiliones, Pseudoscorpions

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Influence of soil pollution by fluorides and sulfites on grown parameters of some flowery-decorative plants (p. 115–119)

Y. Prysedskyi

Soil pollution in industry regions causes a significant negative effect on living organisms, and, particularly, on plants, that leads to decreasing of their physiologically-biochemical processes, grown, development and productivity. At the same time, plants play an important sanitary-hygienically role in industrial regions. However, plant species differently affected by pollution of environment. That is why researching of their reactions is important and aimed to determine resistance mechanisms and resistant species assortment. It should be mentioned that action of soil pollution on plants by fluorides and sulfites that is common for plants produces phosphoric acid, phosphates and phosphate additives, is not well studied.

In this regard influence of soil pollution by sodium fluoride and sodium sulfite on grown of above-ground parts and root systems of eight flowery-decorative grassy plants, common in Donetsk greening, was studied. Studies were made according to the full double factor experiment with three factors levels. Concentrations of pollutants were: fluoride – 0,100 and 200 mg/kg (calculated as F⁻), sulfites – 0,1 and 2 g/kg (calculated as

S²⁻). During the removal of the experiment (after thirty days of cultivation) were measured length of aerial parts (from the root collar to terminal bud) and root systems (from the root collar to the top of the main root). The results are statistically processed by variance analysis and Dannet medium comparison.

It was established, that in *Ageratum houstonianum* cv. *Blue Lagoon* and *Linum usitatissimum* L. seedlings soil pollution by fluorides and sulfites does not cause reliable changes in the stem and root length. In some variants this plants showed tendency of grown intensifying, and complex pollution by 200 mg/kg of sodium fluoride and 2 g/kg of sodium sulfite caused 79,8 % intensification of aboveground part length in *Linum usitatissimum* L.

In *Atriplex hortensis* L., *Cosmos sulphureus* Cav. and *Petunia Hybrida Grandiflora* L. grown on polluted soil occurs significant (on 5,1–35,3 %) oppression of roots grow and at the same time on the grow of aboveground parts contamination does not make reliable effect.

Significant decreasing of stem (on 17,4–63,8 %) and root systems (on 19,8–91,2 %) length comparing to control occurred in *Dahlia variabilis* and *Calendula officinalis* L.

As the result, the most resistant to fluoride and sulfite soil contamination are *Ageratum houstonianum* cv. *Blue Lagoon* and *Linum usitatissimum* L. and it is possible to recommend them to use in greening of contaminated territories.

Keywords: soil pollution, fluorides, sulfites, grown processes, flowery-decorative plant

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Expanded reproduction of Dnipropetrovsk forest landscapes involving breeding approaches (p. 120–123)

L. Tereshchenko, S. Los'

The Dnepropetrovsk region has 198,6 hectares of forest land, including subordinate by the regional department of forestry and hunting – 94,5 hectares, of which 90 % – artificial forests. Forests are concentrated mainly in flood plains, in the ravines and gullies. The main forest forming species in the region are *Pinus sylvestris*, *Quercus robur* and *Robinia pseudoacacia*.

Forests not have the industrial significance, they execute mainly ecological, protective and recreational functions. According to the regional program “Forests of Dnepropetrovsk region for 2011–2015 years” the forest cover in 2015 year should increase to 6,8 %. As part of this program for a future forest-seed base establishment in region were investigated the best local stands and trees in 6 of the 7 existing state enterprises of the forestry management. The research were carried out in several woodlands. The pine and oak stands were aged over 40 years.

It has been concluded that the most productive artificial stands of pine and oak in Dnipropetrovsk region are concentrated mainly in river terraces of Wolfish and Dnieper. Some from ones are the gene reserves.

The four pine stands have an artificial origin and are characterized mostly by a good status. Pine cultures created in different forest site types (A₁, B₂, C₁, C₂), at the same time the pines self-seeding on sites practically is absent. The understorey and undergrowth of deciduous species are very few in number or its coverage is no more than 25 %. Accordingly pine stands are requiring of the reliable protection against the fire.

Observed three oak forest stands are the forest plantations, established in fresh and wet oakeries conditions, characterized by good and

satisfactory state, 2 and 3 class of bonitet. Self-seeding of oak has been noted only at the site in wet conditions. The lack of conditions for natural regeneration necessitates their artificial afforestation.

The best forest stands and in their territory the plus trees were selected. Overall 123 plus trees were selected (69 and 54 pine oak) were selected as a result of realized research in region.

Subsequently, selected plus trees will be used for cuttings and seeds collecting and creating clonal archives, seed orchards and progeny tests. According to the “Development Program of seed groving for 2010–2015 years” plan to create 10 ha clonal seed orchards and 20 ha of seedling seed orchards.

Keywords: *Pinus sylvestris*, *Quercus robur*, biodiversity, gene reserve, plus trees.

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Inventory and evaluation of ecological threats for protected areas (on an example of the Kaniv Nature Reserve) (p. 124–128)

M. Chorniy, V. Grishchenko

Ecological threats for protected areas are not enough studied in Ukraine. Aim of the paper is the determination of such threats and analysis of their influence on ecosystems of the nature reserve on basis of long-term monitoring research. The Kaniv Nature Reserve is a convenient object for the study because it has considerable landscape and biotic diversity, is subject to influence of wide spectrum of anthropogenic factors, has well investigated ecosystems. Scientific research was conducted during the long time. It allows to analyse spatial as well as temporal parameters. For the first time 29 ecological threats were identified: flood, drainage, swamping, pasture, recreation, fires, felling, destruction of plants and animals, building up, afforestation, ploughing up, communal and domestic effluents, dumps, transport, communications, industrial and agricultural pollutions, hydroelectric power station, erosion, open pits, mudflows, landslides, abrasion, biological (genetic) pollution, disturbance of animals, insufficiency of the area and nonoptimal configuration, withdrawal of areas, scientific ungrounded management, reservational successions. Four last ones are specific for nature reserves. Functioning of the Kaniv hydroelectric power station, withdrawal of areas, biological pollution, fires, reservational successions are considered as the most dangerous for the ecosystems of the nature reserve. Meadow steppe plots and flood-plain islands are the most vulnerable. Ecosystems of hornbeam forest are the most stable. Many problems resulted from the creation of the Kaniv hydroelectric power station and water reservoir. Large areas were flooded (including an island of the nature reserve), normal flow of the river was broken and the daily water-level in the Dnieper is not stable.

Key words: nature conservation, ecological threats, protected ecosystems, succession, pollution.

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Taxonomic and ecosystem diversity of planned Sivash national nature reserve and its extension projects (p. 129–133)

A. Ivashov, V. Gromenko, V. Pishkin

According to the decree of the Presidium of the Supreme Soviet of Crimea, Sivash coast has been reserved to establish Sivash National Park. The main objective of the reserve is the networking of objects with high diversity. The study of biological and ecosystem diversity of Crimean Sivash has been carried out for over 15 years. During the work on the site, 278 species of plants and 1198 species of animals were registered. Generalized taxonomic species richness is estimated at 2770 taxa, of which 545 refer to flora, and 2225 to fauna. It has been found out that according to adapting to environmental factors, 19 groups of plants and animals had been formed. All biodiversity of Crimean Sivash is distributed among five ecosystems: alkali soils (salt marsh), steppe, meadow, wetland and weed-field. The main function of ecosystems is material and energy exchange between the producers and the consumers. A generalized index of diversity producers increases from wetland to alkali soils, and then to the steppe and meadow, and reaches its maximum weed-field systems. The overall rate of consumers increases in the systems – saline, steppe, weed-field, meadow, and wetland. To preserve the unique biodiversity of the ecosystems, it is necessary to connect the two national parks: Azov Sivash Reserve and planned Sivash Natural Reserve – by the isthmus of Perekop.

Keywords: Crimean Sivash, reserve, national park, biodiversity, ecosystem.

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Fractal analysis of the land snail's spatial structure population (p. 134–137)

S. Kramarenko, A. Zhukov

The aim of the research is to describe spatio-temporal organization of the land snail populations in terms of fractal geometry. The analysis of spatial structure of the land snail populations has been made with use of the sample area location in the form of a regular grid. The investigate fields have been located within a the Dnepropetrovsk state agrarian university research polygon (The Dnepropetrovsk region, vicinities of Ordzhonikidze) and the Prissamarsky research stationer named after prof. A.L. Belgard of the Dnepropetrovsk national university. The obtained results have been present in the form of patterns of the spatial organisation of snails which consider only presence/absence of individuals within sample areas.

The value of the fractal dimension (D_F) may be obtained on the basis of dependence of the patch sizes used for analysis and these patches number with snail presence. The estimation of the fractal dimension of the spatial patterns of the snail distribution has been assessed.

Data revealed that type of the spatial structure for some populations may be considered as random (D_F close to 1,5), whereas for others as highly aggregated (D_F close to 2,0). Similar values have been received earlier at the analysis of spatial distribution bivalvia and marine gastropoda. The fractal nature of spatial distribution proved to be true also by means of analysis of separate patches of the polygons investigated. For example, for the adult individuals of a land snail *B. cylindrica* on a field of № 1 (2010) fractal dimension is $D_F = 1,797$. Whereas for a quartet of the conforming subfields the yield D_F estimates varied from 1,706 to 1,802. For the adult of individuals of a land snail *M. cartusiana* (in the same place) fractal dimension is equal to $D_F = 1,675$, and for a quartet of the conforming subfields – varied from 1,578 to 1,684. Thus, the investigated species of the land snails form

of “spots” (correspond, apparently, to separate dems) which was in turn organized in “spots” of more high order.

Xerophilous species have been found to form the aggregations distributed in space in not random mode more often than among the mesophilous ones. Hence, the land snail order corresponding to decrease in stability of snails and slugs to desiccation characterized by the change of fractal dimension of spatial distribution from $D_F \rightarrow 2$ (highly aggregated distribution) to $D_F \rightarrow 1$ (hypodispersion). It is possible to assume that such type of spacing of slugs lead to development at them of ability to an autogamy and existence in the form of almost isolated genetical lines. The spatial organisation of the land snail had legibly express fractal character. The fractal measure for various species depended on them ecological features and, first of all, reflected reaction to negative influence of a desiccation.

Keywords: fractal analysis, land snails, desiccation, spatial structure population.

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The diversity of fauna of National Natural Park “Slobozhanskyi” and its conservation (p. 138–142)

N. Brusentsova

Landscape diversity of the National Natural Park (NNP) “Slobozhanskyi” defines the diversity of fauna. The Park was established in 2009 and wildlife research was at very low level at that time. The main goals of this study were fauna inventory, identification of the reasons that may affect on the populations of species within the study territory and determination of measures that will protect them.

Fauna inventory was conducted by a route method visiting different habitats, which are represented in the National Nature Park “Slobozhanskyi”. The forest activities that were carried out on the territory before the establishment of the Park, and changes of wetlands and forest lakes were analyzed by forest inventory data and satellite imagery in order to determine the cause, which may affect the diversity of animal species. The places with a lot of domestic waste and areas that are regularly visited by people were mapped.

According to preliminary data more than 400 species of animals inhabit the National Nature Park “Slobozhanskyi”. 180 species are included in nature conservation lists valid on the territory of Ukraine. On the whole, vertebrates are studied better than invertebrates. Largest amount of data among invertebrates collected for the butterflies (Lepidoptera), dragonflies (Odonata) and spiders (Araneae).

Factors that may influence on the fauna diversity of the Park are drying of wetlands and forest lakes, forest fragmentation which associated with the felling of trees before the creation of the National Natural Park “Slobozhanskyi”, recreational load, pollution by domestic waste. 36 species of animals requires the most attention in the development of measures to protect fauna. They are rare on the territory of Ukraine

or vulnerable on the territory of the Park and its environs. Beaver (*Castor fiber*) and badger (*Meles meles*) – key species of aquatic and forest ecosystems of the National Natural Park “Slobozhanskyi”. In this article the types of threats and actions that will help to keep populations of each of the 36 species are presented.

During further fauna inventory of the NPP “Slobozhanskyi” more attention should be paid to invertebrates, as well as birds and small mammals. The activities that will be aimed both to protected species and to their habitats are very urgent.

Keywords: fauna, National Natural Park, diversity.

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Cash price botanical monument mountain nature (p. 143–145)

I. Skoroplas

Vegetation grossing mountains have long attracted the attention of botanists as one of the largest and most diverse composition of cells per coenotic steppes of Central European type. Botanico-geographical and geobotanical information about this area many rare and endangered plant species found in the writings of Wierdak (1926), Kozłowska (1931), Gajewski (1937), G.S. Kukovytsi (1970, 1976), J.R. Shelyag-Sonko, J.P. Didukh et al. (1981), I.I. Dmytrash, N.V. Shumska (2011). In the summer of 2012 by mountain Cash, we have studied a population of rare species *Carlina cirsioides* Klokov. Vidkasnyk osotovydney (C. cirsioides) – endemic, many polycarpic species, included in the third edition of the Red Book of Ukraine and the European Red List.

Study is based on field research materials populations of rare species C. cirsioides in steppe areas of the tract Cash Mountain, located on the west of the village. Bovshiv Galician district, Ivano-Frankivsk region. This zahidnoopilsky steppe reserve as part of Galician National Park. The total area of the mountain is about 160 hect-

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ares. The mountain stretches along the left bank of rotten lime and Burshtyn Reservoir 4 miles and at its widest point reaches 1200 m in altitude, it reaches 340 meters above sea level and 100 meters above the valley rotten limes. Investigated species is part of the formation *Anthericeta ramosum*, *Brachypodieta pinnati*, associations represented here *Anthericum ramosum* + *Carex humilis*, *Brachypodium pinnatum* + *Carex humilis*, *Brachypodium pinnatum* + *Anthericum ramosum*.

Meadow-steppe communities which are confined populations of *C. cirsioides*, unique centers of growth not only this species, but other species listed in the Red Book of Ukraine such as, *Adonis vernalis* L., *Astragalus onobrychis* L., *Crambe tataria* Sebeok, *Chamaecytisus blockianus* (Pawt.) Klask., *C. podolicus* (Blocki) Klaskova, *Trifolium rubens* L., *Thalictrum foetidum* L., *Stipa capillata* L., *S. majalis* Klokov, *S. pennata* L., *S. tirsia* Steven, *Iris hungarica* Waldst. et Kit.

The population of *C. cirsioides* numerous (967 individuals), covers an area of approximately 1.5 hectares in the central part of the mountain. It includes juvenile – (9.7 %) individuals immaturnykh – (8.2 %), vegetative – (28.7 %), generative – (53.4 %), the population is tolerant and resistant, the number of vegetative and generative individuals is much greater than the number of other age groups.

Keywords: *C. cirsioides*, Cash Mountain, association formation, juvenile, immaturni, vegetative, generative individuals.

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Species diversity of the land molluscs (Gastropoda, Pulmonata) of steppe Dnieper Area (p. 146–150)

N. Gural-Sverlova

The systematic studies of the land molluscs in the steppe zone of Ukraine except the Crimean peninsula were began comparatively recently – on the border of XX and XXI centuries. To this day the faunal summaries were made mainly for the western and eastern parts of this territory. In this article the species composition of the land molluscs registered in the territory of Kherson, Zaporozhye and Dnepropetrovsk regions was analysed. Materials for article are numerous collections passed for the determination or storage in State Museum of Natural History in Lviv and the literature data. On the studied territory 42 species of the land molluscs can to consider reliable registered. They belong to the following families: Succineidae (*Succinella oblonga*), Cochlicopidae (*Cochlicopa lubrica*, *C. lubricella*), Valloniidae (*Vallonia pulchella*, *V. costata*), Pupillidae (*Pupilla muscorum*), Vertiginidae (*Vertigo pygmaea*, *Vertilla pusilla*), Truncatellinidae (*Truncatellina cylindrica*, *T. costulata*), Enidae (*Chondrula tidens*, *Brephulopsis cylindrica*, *B. bidens*), Clausiliidae (*Cochlodina laminata*), Punctidae (*Punctum pygmaeum*), Euconulidae (*Euconulus fulvus*), Gastrodontidae (*Zonitoides nitidus*), Vitrinidae (*Vitrina pellucida*), Zonitidae (*Aegopinella minor*, *Perpolita hammonis*, *Vitrea crystallina*, *Oxychilus deilus*, *O. translucidus*), Bradybaenidae (*Fruticicola fruticum*), Helicidae (*Cepaea vindobonensis*, *Helix albescens*, *H. pomatia*, *H. lucorum*), Hygromiidae (*Helicopsis striata*, *H. retowskii*, *Xeropicta*

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krynickii, *X. derbentina*, *Euomphalia strigella*, *Monacha fruticola*, *M. cartusiana*, *Pseudotrachia rubiginosa*, Limacidae (*Limax maculatus*), Arionidae (*Arion subfuscus*), Agriolimacidae (*Deroceras caucasicum*, *D. subagreste*, *D. sturanyi*, *D. laeve*). The presence in the steppe Dnieper area of the *Xerolenta obvia* and certain species of the genus *Helicopsis* requires of the subsequent confirmation with the studying of the anatomical indications. Possibly this concern of the certain representatives of the genus *Deroceras*.

Keywords: land molluscs, species diversity, steppe Dnieper Area, Ukraine.

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As regards cenotic affinity rare species of Landscape Conservation Area “Tsetsyno” (p. 151–155)

O. Vanzar, V. Romanyuk, O. Kalancho

In the Chernivtsi region 23 existing protected areas of national importance, including the special place is occupied Landscape Conservation Area “Tsetsyno”, on the western outskirts of the city of Chernivtsi.

Given the proximity to the city, he suffers serious recreational digression, which adversely affects the conservation status of species and groups that are protected. With the increasing human impacts in various forms is necessary to study vegetation reserve and setting trends of its further formation.

A study of vegetation phytocenotic features based on analysis of floristic inventories obtained using field and office research methods. Having phytocenotic analysis of vegetation landscape reserve of national importance “Tsetsyno” we found 12 common associations representing all the floral diversity and value of the studied areas.

Found that most of the investigated associations are characterized by relatively low representation of rare component. Association Fagetum (sylvatica) aegopodiosum podagrariae represented the largest number of species listed in the Red Book of Ukraine (2009) in the complete absence of alien species. A number of associations (especially Fagetum (sylvatica) galiosum (odorati) alien fraction increased, indicating that the overall synanthropisation natural plant communities Landscape Conservation Area “Tsetsyno”.

Keywords: vegetation, wildlife sanctuaries, associations, rare species, adventive species.

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Actual questions of agro-ecological zoning of Ukraine (p. 156–161)

T. Egorova, V. Konishchuk

Existing approaches agroecological zoning and agricultural landscapes as spatial subdivision agrosphere operation. We consider the priorities of general and targeted environmental zoning areas. Presented differences anthropocentric and biocentric approaches to zoning and environmental analysis of agricultural landscapes. The features of the methodology specific agroecological zoning and mapping of Ukraine to address the problems of sustainable development of agricultural land. A unified theory of the criteria applied agroecological zoning measures. The principles of landscape zoning and shows their relevance in the system of general scientific agroecological zoning of Ukraine.

The principles of natural and anthropogenic taxonomic classification of agricultural landscapes. The first phase of agroecological zoning requires a coherent typological classification groupings agricultural landscapes based on natural and anthropogenic factors of the topical structure, the main agro-ecological processes and information parameters of quantitative evaluation. The smallest unit of spatial zoning is agrolandscape, which should be considered as an agricultural area with a homogeneous topical structure, functional use and features of natural and anthropogenic processes. Proposed a Red Book Landscapes of Ukraine.

Presented the problematic issues of modern land use and the possibility of their science-based solutions in the target agro-ecological mapping and zoning.

Keywords: agrosphere, landscape, agro-ecological zoning, criteria, principles, classification of natural and anthropogenic processes.

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Ground for creation of technogenous reservation "Pershotravnevyi" (p. 162–166)

O. Smetana, O. Krasova, O. Dolyna, Y. Yaroshchuk, Y. Taran, E. Golovenko

The results of ecotope diversity and biodiversity studies within mining waste bank of "Pershotravnevyi quarry" (PJSC "NORTHERN IRON ORE ENRICHMENT WORKS"). It is shown that for certain biodiversity values the dump area had better parameters than current and projected man-made preserves of Dnipropetrovsk Region. The authors consider it necessary to give it the status of man-made landscape reserve.

The aim of the study is to evaluate aspects of species diversity and ceno-diversity spatial differentiation of the dump.

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Field materials obtained during the monitoring survey of soil and vegetation during 1996 – 2013. Authors completed over 500 geobotanical descriptions by the standard methods, described 90 soil profiles. They also performed detailed mapping of key areas by instrumental means; maps of dump vegetation were made using mine survey materials, which were refined using the Global Positioning System (GPS).

List of higher plants of studied area consists of 192 species belonging to 156 genus and 47 families; lichen – 14 species from 10 genera and 8 families. Cenotic diversity is represented with 24 formations and 40 associations. The exceptional mosaic of vegetation is a consequence of landscape diversity on the level of facies. Authors found a strong link in a joint formation of soil and vegetation. Significant faunal diversity of “Pershotravnevyi” dump is caused by such factors as large area, ecotope diversity, ecotope contrasts, and area abundance (rare visiting by people).

Sozological value of the dump is represented with 10 species of higher plants (*Astragalus dasyanthus* Pall., *A. onobrychis* L., *Linaria bieberstinii* Besser, *Crambe maritima* L., *Stipa capillata* L., *S. lessingiana* Trin. Et Rupr., *S. ucrainica* P. Smirn., *Rosa bordzilowskii* Chrshan., *R. corymbifera* Borkh., *Thymus* × *dimorphus* Klovok et Des.-Shost.) and 5 species of fauna (*Papilio machaon* L., *Iphiclides podalirius* L., *Nyctalus noctula* Schreber, *Vespertilio murinus* L., *Vipera renardi* Christoph) which has certain protected status.

Keywords: technogenous reservation, Ingulets ecocorridor, floral and cenotic diversity, spatial differentiation, sozological value.

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The preservation of the biological diversity of valuable of Zhytomyr Polssya forest vegetation ecoceneses. (p. 167–169)

V. Levchenko, I. Shulga, J. Ostapchuk

The entry. The separate aspects of problem of a search and estimation of rare forest associations are reflected. Marked expedience of use of the special analysis of structure of forest fund on the previous stage of their search. Along with the role of forest vegetation formations in the preservation of forest ecocenos biodiversity, the problem of preserving rare forest plant formations has become the most topical in the first half of the 19 st. century.

The purpose and objectives of research. Moreover, the solution of the problem is impossible without the preservation of rare and vanishing species. Numerous investigations into rare forest plant formations can be observed both in Ukraine and the world over. They can serve the basis for the theoretical principles related to the above formations conservation and protection.

The methods. When assessing rare plant formations and determining the efficiency of their protection, one can observe the tendency to enhance the role of quantitative methods.

The results. One of them was suggested by J. Loidi ioho defines rarity as a function of medium distance between plots covered with the formations of one association. Conjugation analysis of geographic ranges of edyifikatoriv these groups will help to clarify the nature of their rarity. For example, groups sporadically presented within a limited area of research in a small area and formed edyifikatorom, geographic area which coincides with the territory, it is necessary to evaluate how the rare worldwide. If edyifikatora geographical area is broader (eg, extends within the entire continent), these groups need to classify regionally rare and so on. A similar approach should be used to identify and assess the value of old-growth stands (by analysis of the age spectrum stands), with occasional asektatoramy groups (by analysis of plants) and others. For the final assessment of the nature rarity forest communities represented in the study area in a small area, it is obligatory to establish their spatial location in Maps forests in Ukraine are available for each forest management, the

implementation of field studies to identify their vintage components (plants and animals listed in the red Book of Ukraine, the European red List (1991), the regional lists of species to be protected, endemiv etc.) as well as the involvement of other additional features.

The conclusions. The ultimate assessment of rarity of plant formations presented in the region of investigation requires. The use of database technology enables you to select according to various criteria actually rare communities (sporadically distributed plantations, which occupy a small area). Assessment of the nature of their rarity advisable to perform the further additional studies.

Keywords: forest policy, biological diversity, ecological policy, ecological economics, vegetation ecoceneses, protected areas, biodiversity, endangered species, conservation and preservation of nature conservation.

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Wetland birds of the Svyatoshyn ponds in Kyiv and their seasonal changes (p. 170–174)

V. Kazannyk, A. Tyrchuk, V. Yanenko

Svyatoshyn ponds are the biggest in area terms in Kyiv. The ponds are located on Nivka River. Generally published data on waterfowl and water birds of Kyiv and Kyiv outskirts is dedicated to wintering and migration or discovery rare

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species. And Dnieper River and Kyiv reservoir storage were main area for previous research. Studies of waterfowl and water avifauna in Kyiv beyond the Dnieper area of are primarily conducted just in wintering period. The registration data concerning waterfowl and water avifauna at this region beyond the wintering period of are practically absent. Therefore we decided to carry out the qualitative and quantitative exploration of avifauna of Svyatoshyn ponds area. This exploration covered to wintering, breeding, spring and autumn migration periods. The registration data of avifauna of Svyatoshyn ponds area collected by authors during 2008–2011 as well as available published information were used for writing this paper. Standard methods for registration of waterfowl and water birds such a route method and registration from one point were practiced. In 2010 during breeding period the registration of waterfowl birds broods was conducted. Binoculars 7×50 and 10×50 as well as spyglass with 20× multiple zooming were used during registrations. Waterfowl and water birds of the Svyatoshyn ponds in Kyiv were studied and 33 bird's species were found. 4 of them are breeding species: Great Crested Grebe, Mallard, Coot and Moorhen. Coot had the most broods from other species – sixteen. Spring avifauna includes 23 species of birds, summer avifauna – 18 species, autumn avifauna – 12 species, and winter avifauna includes 7 species. In summer Black-headed Gull, Coot and Black Tern are the most numerous species; in autumn Mallard and Black-headed Gull are the most numerous; in winter Mallard has highest number. One of the observed species is Corncrake listed in the World Red Book of IUCN. Black Kite and Lapwing pointed out during the registrations are put into European Red List of Birds. The Bern Convention on the Conservation of European Wildlife and Natural Habitats protects 32 species of birds, and the Conservation of Migratory Species of Wild Animals (CMS, Bonn Convention) – 18 species of birds registered in Svyatoshyn ponds area. In addition, The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) protects 16 observed species of birds. Black Kite and White-tailed Eagle are protected by The Washington Convention (CITES) and these two bird species are listed in the Red Book of Ukraine. Little Bittern, Black Kite, Corncrake, Kingfisher are put into Kyiv Red List. The species representation of avifauna of Svyatoshyn ponds area stably decreases from spring to winter period. In spite of major anthropogenic pressure the ponds serve as an important breeding and migration resting areas as well as wintering areas for waterfowl and water birds.

Keywords: ornithofauna, avifauna, Svyatoshyn ponds, breeding species, brood, winter avifauna, most numerous.

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The colony of Castor fiber in the nature reserve "Dnieper-Orelsky" (p. 175–179)

G. Zadorozhnaya, M. Trifanova, J. Zhukova

Under conditions of intensive anthropogenic and recreational pressure on the ecosystem, the existence of a natural reserve "Dnieper-Orelsky" is a condition of preservation of variety of flora and fauna of all Dnipropetrovsk region. Almost disappeared by the beginning of the twentieth century species of the castor fiber due to natural dispersion gradually settles in the most suitable for its existence reservoirs, restoring its prior area. Its absolute abundance in the territory during 1992–2008 was increased from 5 to 28 individuals. The aim of the work is to study the settlement of beavers in the nature reserve "Dnieper-Orelsky" their forage reserve, environment-forming role, and to work on new safe methods for their registration. Accounting work was carried out by perambulation of the shoreline of the river and the lake with boat in October–November 2013. Coordinates of the found animal tracks fixed with the help of GPS-navigator, were recorded in the field book and photographed for the further identification. In geostatistical analysis, these data act as a training sample on which probabilistic models are built which link the species' area of living with preferred environmental conditions.

Hot scent of vital activity of beavers namely holes, crawlways to the water, nibbled trees

found on the northern and southern shores of the lakes "Solone" and "Solonenke", in the coastal area of the lake "Sokilki". Forage base of beavers in the territory of the reserve in 80 % of cases consists of white poplar (*Pópus alba L.*), in 12 % – of black poplar (*Pópus nigra L.*), sometimes there occur sporadically fallen oaks (*Quercus robur L.*), amorphous (*Amorpha fruticosa L.*), elm (*Ulmus laévis Pall*) and alder (*Alnus glutinosa L.*). Bavers' forage area spreads for no more than 25 meters from the water's edge. The average diameter of felled trees is 20 cm, 82 % of the trees has a diameter from 5 to 40 cm. The diameter of the largest tree, felled by the beavers, is 72 cm. 88 % of the trees have sections of the removed cortecs, which start at the level from 0 to 50 cm over the land, in 11 % of the cases these sections start at the level from 50 to 60 cm. On one tree the lower bound of the nibble located at the rate of 70 cm. The upper boundary of nibbles was 35–90 cm from the ground. The width of the nibble prints on fallen trees ranged from 3 to 8 cm, but in most cases ranged from 5–6 cm, indicating that the beavers' families, which live in the explored area, have progeny both of the previous and current year.

Remote sensing data helped produce factor analysis of the ecological niche of animals. The results of analysis were used to identify the characteristics of the environment, which make the place suitable for the existence of the species. Received data of the area of animals' living were used as a training sample on which probabilistic models were built which link the species' area of living with preferred environmental conditions. It was found out that similar ecological conditions of areas in which the presence of beaver is noted, has a number of other places of the reserve.

Keywords: area of the Reserve, beaver, fossil's trace, factor analysis of the ecological niche.

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Action Pb^{2+} and Cd^{2+} on background of NaCl salinity on indicators of water exchange of the leaves of *Lolium perenne* L. (p. 180–183)

V.P. Bessonova, O.A. Ponomaryova, O.Y. Ivanchenko

The effect of heavy metals ($Pb^{2+}+Cd^{2+}$) and salinity (NaCl) on leaves water exchange parameters

Lolium perenne L. is studied. The experiment was carried out in four ways: 1) control (unpolluted soil); 2) in the soil brought Pb^{2+} and Cd^{2+} 0,1 and 0,003 g/kg; 3) in the soil brought NaCl in an amount of 0,2 g/kg; 4) in the soil brought all investigated pollutants ($Pb^{2+}+Cd^{2+}$ and NaCl) in the same amounts, in versions 2 and 3. It was established that plants of all variants did not significantly differ in the total water content in the leaves. The amount of bound water significantly higher in the experimental plants compared to control, especially in variants with salinity.

The water-holding capacity of leaves of plants on the 30th, 38th and 45th day was analyzed. Major water losses were observed in the control, the highest water-retaining capacity in plants exposed to all investigated pollutants. Thus, for the actions in a *Lolium perenne* within 30 days of complex pollutants ($Pb^{2+}+Cd^{2+}$ and NaCl) water-retaining capacity greater compared with the effect of only NaCl. With increasing cultivation periods (45 days) the difference in this index between these options is not found. Influence of heavy metals is much smaller. In all variants curve of intensity transpiration of leaves has a one vertex with the maximum in the midday hours. The comparison of the intensity of transpiration in leaves of plants grown in different versions shows that on 30 day maximum value of this index in control, the lowest – for the joint action of heavy metals and chloride salinity. With the decline of this index can be arranged as follows: variant of control > $Pb^{2+}+Cd^{2+}$ > NaCl > $Pb^{2+}+Cd^{2+}+NaCl$. At 45 days, the highest average intensity of transpiration was found in the variant with heavy metals ($Pb^{2+}+Cd^{2+}$) – is significantly higher than the control. The lowest intensity of transpiration was in leaves of plants grown in versions with salty.

The reaction of 45-day-old plants of the transpiration parameter largest impact on salinity remains the same as in the 30-day. The response to the effect of heavy metals varies. In joint action on plants $Pb^{2+}+Cd^{2+}+NaCl$ is lower than when exposed only $Pb^{2+}+Cd^{2+}$, but higher than the action only salinization.

Keywords: *Lolium perenne* L., water metabolism, transpiration, water-retaining capacity, forms of water, salinity, heavy metals

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Ecological scales of northern-steppe broad-leaved forests flora species (p. 184–190)

N. Nazarenko

Habitats determination is one of the important tasks of forest ecology. However, the straight habitats evaluation is impossible or difficult often especially for express-information obtained. Phytometer methods are an alternative of habitats evaluation.

Phytometer methods are based on the scales usage. Phytometer scales are based upon indicated species or community localization in environmental factors axes. Factors are scoring by certain number of factors. The most often habitats are estimated by indicator species groups or all species of the community ratio. The most important methodical problems of phytometer usage are indicators and their features specification, indicator functions estimation, positive and negative indicators selected and association indicators with habitats.

The most frequently in forest ecology habitat estimation based upon phytometer ratio, when all species used as phytometers which charac-

terized by score for the most important ecological factors such as temperature, moisture, light, soils salt, acidity, nitric, aeration and moisture regimes.

But the usage of these methods straight is related with a high probability of mistakes. Particularly, there are two types of phytometer scales – point and interval. The first is much more accurate, but in local conditions the species can characterize by great deviation from beginning score which based on optimum position in tolerance curve. For the interval scales the local species habitat score is difficult to define and average score characterized by mistakes such as point scale using. Thus, for each region the correction of ecological scales is important task and regional point scales can developed upon habitats species conditions.

The Didukh scales (based on Ramensky's and Tsyganov's scales for vascular plants species of Russia deciduous forests) have been accepted as reference in the article. The adjustment species localization in scales carried out by phytometer realized niche evaluation for specific habitats. The species score defined as the centroids in a multidimensional environmental factors space. As the evaluation result the scales for 156 vascular plants species are developed for the deciduous forests of Northern Steppe of Ukraine. These scales can recommend for habitats evaluation for xerophilous and floodplain oak forests in arid steppe climates.

Keywords: phytometer, regional phytometer scale, steppe broad-leaved forests.

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The condition and productivity of stands *Pinus sylvestris* and *Robinia pseudoacacia* of natural reserve "Dniprovsko-Orilsky" (p. 191–195)

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Orilsky forest district is part of the natural

reserve «Dniprovsko-Orilsky». Its territory is within the left bank (gorge) Barrens. In Orilsky natural reserve white acacia (*Robinia pseudoacacia* L.) forest occupies area of 97,6 ha. Except the white acacia, forest planning is formed with species from coniferae – pine (*Pinus sylvestris* L.), which occupies area of 436,6 ha.

According to the basic material of forest Orilsky natural reserve, the white acacia forest is concentrated in three edaphotops B₃, C_{0,1}, D₀. Acacia white forms stands in terms of very dry, dry and moist hihrotops. Most of the planting area of analyzing kind is in moist conditions hihrotop (B₃) – 59,6 %. Stands of pine concentrated in three trofotop – A, B, C and three hihrotop – 1, 2, 3. The largest part of the stands – 81,0 % – formed in subir.

A third area of white acacia is represented by pure stands with coefficient of composition "10" (33,4 %). Predominant stands for the pine also appeared pure stands with 2/3 occupied area.

The existing forest site conditions are not enough favorable for the formation of high-productivity white acacia and pine stands, which is evidenced by the area distribution analyzed type for the II and III class of bonitet.

Forest densities are dominated high densities and middle densities as of white acacia stands, well as pine.

Result of analysis of the age structure of white acacia and pine in reserve permits to claim about the irregular dispatching areas occupied by age group for these breeds and absence of specific age group. The largest area of acacia is occupied by stands of overmature specimens – 89,9 % of the total area in reserve, the pine – the middle-aged stands (56,1 %).

Keywords: silvicultural-taxational index, forest types, age structure, bonitet, stock stands

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