

Summary Report: Klamath Bird Observatory's 2011 Long-term Constant Effort Monitoring Station Efforts in the Klamath-Siskiyou Bioregion

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Cover photograph: American Robin with newly-applied band.



Summary Report: Klamath Bird Observatory's 2011 Long-term Constant Effort Monitoring
Station Efforts in the Klamath-Siskiyou Bioregion

By Robert I. Frey and Jaime L. Stephens

Background

Klamath Bird Observatory (KBO) continued its comprehensive, long-term bird monitoring program in the Klamath-Siskiyou Bioregion in 2011. The objectives of this program are to collect data that provide an index to species diversity and abundance in riparian and upland habitats, to evaluate the reproductive success, survivorship, and population health of Neotropical migratory and resident birds, and to track landbird population trends.

The Klamath-Siskiyou Bioregion lies within the Partners in Flight (PIF) Pacific and Intermountain West Avifaunal Biomes. Our monitoring efforts are conducted within several habitat types including true fir, mixed conifer, mixed conifer hardwood, oak woodland and riparian forest types. PIF describes 45 associated focal species for which habitat conservation and monitoring efforts should be targeted (Altman 1999, 2000, CalPIF 2002, RHJV 2004, Rich et al. 2004; Tables 1a-1c). KBO's monitoring efforts are a major component of the Klamath Bird Monitoring Network, a regional program established in 1992 (Alexander et al. 2004). KBO works with the U. S. Forest Service Pacific Southwest Research Station, Arcata and partners in the Klamath-Siskiyou Bioregion to fulfill monitoring goals defined by the National PIF Inventory and Monitoring Working Group (Hussell and Ralph 1998, Rich et al. 2004) and Oregon-Washington (Altman 1999, 2000, Altman and Bart 2000) and California PIF (CalPIF 2002, RHJV 2004) recommendations.

As a part of KBO's long-term monitoring program, we maintained efforts to track population trends and demographics with constant effort mist netting stations, breeding bird surveys, and extensive point count survey routes throughout the Bioregion. KBO also continued development of its role as a support source for regional research and monitoring projects by providing technical assistance, training, and consultation to cooperating individuals, organizations, and agencies. This report provides a summary of 2011 constant effort mist netting station and other mist netting efforts, technical training, and banding-associated outreach and education efforts. KBO's long-term monitoring point count efforts are documented in a separate report (Stephens and Alexander 2011).

Monitoring at Constant Effort Stations

KBO's long-term constant effort monitoring stations are designed to provide distribution, abundance, and demographic information. Standardized methods are followed including mist netting and banding, area search and point count survey, vegetation survey, and soft tissue sampling (for DNA and stable isotope study) (Ralph et al. 1993, 2010; Stephens et al. 2010). KBO conducted integrated bird monitoring accordant to constant effort station (CES) methodology at 12 CES sites in 2011. We continued efforts at 10 CES sites that have been operated for 10 years or more, one site operated five years, and one for the second year.

Monitoring at ten of the sites began at the onset of the landbird breeding season in southern Oregon and northern California, varying by altitudinal location, and continued into October, inclusive of the fall migration. The Deer Creek Center site was operated during the spring migration season only. The Willow Wind site was operated year round, extending before and after the breeding and fall migration seasons, providing KBO with valuable community volunteer training, environmental education, and public outreach opportunities (see *Technical Training* and *Outreach and Education Integrated with Banding Efforts* below). Monitoring efforts outside the breeding and fall migration seasons at these two sites also provided early and late arrival and winter resident information for migratory species in southern Oregon.

Each CES effort was scheduled for the five hours following sunrise (with the exception of the Wildlife Images CES scheduled for six hours). Exact locations of the study sites were recorded in KBO's geospatial database and the physical characteristics for each site described using a location and vegetation relevé survey method recommended by Ralph et al. (1993). Detailed descriptions of all site localities are included (Table 2).

Combined constant effort monitoring totals from the 12 locations include 7,094 birds, of 90 species, captured during 10,949 net hours (number of 12 meter mist nets operated multiplied by time operated in hours). During the 222 banding efforts (604 person days), 426 area search surveys were completed (Tables 3a, 4a, 4d). During the area search surveys, 145 species were detected, including 65 that were not captured. The methods used gathered distribution, abundance, and/or demographic information for these species, including many identified by PIF in continental and regional habitat conservation plans as priority or focal species (Altman 1999, 2000, CalPIF 2002, RHJV 2004, Rich et al. 2004; Table 1a-1c). Point count surveys were also conducted at CES sites during the breeding season (Stephens and Alexander 2011).

KBO's long-term monitoring CES efforts were conducted in a variety of habitats; however, in the interest of a clearer presentation, we have synthesized our effort results into two broadly distinct landscapes, *Eastside Cascades Range and Klamath Basin* and *Westside Cascades and Klamath Ranges*. Site-specific habitat descriptions are available upon request. Long-term monitoring CES efforts in northern California completed in 2011 by KBO's affiliate Humboldt Bay Bird Observatory are described in a separate report (Rousseau and Ralph 2012).

Eastside Cascade Range and Klamath Basin

From May through August (breeding season), all seven *Eastside Cascades Range and Klamath Basin* CES sites were scheduled once every 10-day period (Period 1 beginning 1 May). In September and October (migration season), all CES sites were scheduled and operated once per week, except for the Rocky Point Cabin site which was scheduled for an increased effort frequency of thrice weekly.

At the seven eastern CES sites, a total of 4,438 birds were captured in 6,083 net hours from May and into October during the 123 banding efforts with 333 person days (Table 3a). A total of 235 area search surveys were conducted.

During the breeding season, a total of 2,127 birds were captured in 3,128 net hours during 64 efforts (Table 3b). A total of 122 area search surveys were completed. During the fall migration season, a total of 2,311 birds were captured in 2,954 net hours during 59 efforts (Table 3c). A total of 113 area search surveys were completed.

Overall, the Rocky Point Cabin site had the highest total captures, with a greater number of net hours than the other eastern sites; as well as the highest capture rate (captures per net hour) and greatest average species richness (Table 3a). During the breeding season, the Frain Ranch Campground site had the highest total captures and highest capture rate. The Rocky Point Cabin site had the greatest average species richness (Table 3b). During the fall, the Rocky Point Cabin site, with an increased effort frequency, had the highest total captures, and the highest capture rate and greatest average species richness (Table 3c).

Westside Cascades and Klamath Ranges

From May through August (breeding season), four of the five *Westside Cascades and Klamath Ranges* CES sites were scheduled once per 10-day cycle (Period 1 beginning 1 May). In addition, the Willow Wind site was scheduled thrice monthly January-April and November-December. The fifth site, at Deer Creek Center, was operated weekly April-May only (spring migration). All of the Deer Creek Center efforts and the Willow Wind efforts outside of May-October are presented separately (Table 4d). The four sites operated beyond May and into October were scheduled for an increased frequency of efforts for the fall migration season. Beginning 1 September, the Wildlife Images site was scheduled once per three-day cycle through October. The other three sites were scheduled once per week September through October.

At the four western CES sites operated between May and October, a total of 1,963 birds were captured in 4,016 net hours during the 77 banding efforts, with 190 person days (Table 4a). A total of 151 area search surveys were conducted.

During the breeding season, a total of 755 birds were captured in 2,037 net hours during 39 efforts (Table 4b). A total of 76 area search surveys were completed. During the fall, a total of 1,208 birds were captured in 1,979 net hours during 38 efforts (Table 4c). A total of 75 area search surveys were completed.

Overall, from May into October, the Wildlife Images site, with a greater number of net hours than most of the other Westside sites, had the highest total captures as well as the highest capture rate, and greatest average species richness (Table 4a). During the breeding season, Wildlife Images had the highest total captures, greatest average species richness, and highest capture rate (Table 4b). During fall, the Wildlife Images site, with the increased effort frequency, had the highest total captures (Table 4c). The Willow Wind site had the greatest average species richness. The Ashland Watershed site had the highest capture rate.

During winter (January-April and November-December) efforts at the Willow Wind site and spring (April-May) efforts at the Deer Creek Center, 693 birds were captured in 850 net hours during 22 efforts (Table 4d). A total of 40 area search surveys were completed.

Public Demonstration, American Dipper Nest Study, and Isotope-sampling Efforts

In addition to constant effort monitoring stations, mist netting and banding efforts completed in 2011 included public demonstration as a component of outreach events, target-species netting, and stable isotope sampling (see Tissue Sampling section below). The demonstration efforts took place as components of International Migratory Bird Day festivals at Veteran's Park in Klamath Falls and North Mountain Park in Ashland on 14 May. Single efforts were completed for Lithia Dipper Watch; a community-based American Dipper nesting behavior study focused on a stretch of Ashland Creek in Ashland, Oregon, and for stable isotope-sampling as part of a KBO altitudinal migrant study (see below). Totals for these efforts included 62 birds captured during 43 net hours (10 person days).

Tissue Sampling

Neotropical Migratory Bird Conservation Genetics and Stable Isotopes Project

Since 1999, KBO has contributed to the University of California, Los Angeles Center for Tropical Research's (CTR) Neotropical Migratory Bird Conservation Genetics and Stable Isotopes Project. The CTR is investigating the genetic structure of migratory bird populations in order to connect breeding areas in North America with wintering areas in Latin America and the Caribbean. This field of research seeks to determine the factors responsible for population declines of Neotropical songbirds that migrate between the Caribbean, Central America, Mexico, and North America. Using molecular genetic techniques (utilizing genetic material and stable isotopes obtained from a single feather from a bird), CTR researchers have been able to connect breeding and wintering populations of songbirds (<http://www.ioe.ucla.edu/CTR/>). CTR's findings provide conservation biologists with the means of correlating habitat changes with declining populations. Demographic data contributed by KBO and other monitoring programs are integral to the CTR's research efforts. In 2011, KBO collected and contributed 226 feather samples to this project.

Altitudinal Migration Study

Since 2008, KBO has investigated regional altitudinal migration using stable isotopes. Isotopic ratios of carbon, hydrogen and deuterium in inert keratin tissues of feathers and toe-claw samples can be indicative of the location where these tissues were grown. Using isotope analyses, we are studying whether birds that winter in the Rogue Valley breed in our surrounding mountains and/or valleys or breed elsewhere and migrate to the valley for the winter. We collected paired feather and claw samples from all age-sex classes of the wintering species Hermit Thrush, American Robin, (Audubon's) Yellow-rumped Warbler, Song Sparrow, (Oregon) Dark-eyed Junco, Red-winged Blackbird, and Purple Finch at sites above snow-line and below snow-line proximate to the southern end of the Rogue Valley. In 2011, 66 samples were collected.

Technical Training

In 2011, KBO continued providing technical training in bird banding methodology and bird conservation education and outreach at CES sites. KBO's monitoring program is integrated with our academic bird banding internship program, providing specialized training in the latest and most effective bird monitoring techniques for students and biologists. In addition to this on-going instruction, KBO continued to provide intensive bird banding techniques training at these sites during monitoring efforts for volunteers and professionals from the community, academia, and land management agencies.

Seven student volunteer interns received experiential instruction in advanced bird banding and survey techniques. The instruction is supplemented with study materials, published by the North American Banding Council, pertinent scientific literature, and regular seminars presented by KBO staff. Our international internship program is made possible through our partnerships with the Ashland Rotary Club, the Southern Oregon University Office of International Programs, and the U.S. Forest Service International Programs.

We also provided experiential training in banding techniques during monitoring efforts at CES sites to partnering biologists and volunteers from the Bureau of Land Management, U.S. Forest Service, and University of Utah. These professional-level training sessions totaled five person days.

Two banding techniques workshops were presented, one in May and another in August, at our Rocky Point (Upper Klamath Lake) Field Station for Klamath Bird Monitoring Network cooperators and other regional researchers. Participants received instruction in advanced landbird ageing and sexing techniques, standard biometrics, mist net use and maintenance, outreach and education communication skills, and general field safety principles. The workshops were attended by 33 individuals.

Within the spirit of Partners in Flight, KBO continues a commitment to international capacity building through technical training. In 2011, we continued working with the U.S. Forest Service International Programs' Wings Across the Americas to host two student volunteer interns from Costa Rica and Trinidad and Tobago. KBO also participated in three international training efforts. In November, we co-sponsored an intensive bird banding workshop in partnership with the Centro de Ornitología y Biodiversidad, Costa Rica Bird Observatories, Museo de Historia Natural de la Universidad Nacional de San Agustín de Arequipa, Tericaya Ecological Reserve, and the Western Hemisphere Bird Banding Network at Madre de Dios, Perú. Several former KBO international banding interns assisted as instructors.

In a celebration of community cooperation, KBO welcomed the contributions of several local volunteers who offered 63 person days assisting at stations in the Ashland area while receiving training in banding skills. These individuals were especially involved in the winter months' operation of the Willow Wind site.

Toward the fulfillment of the North American Banding Council (NABC) mission of promoting sound and ethical banding principles and techniques, KBO hosted a NABC bander and bander

trainer certification evaluation session in partnership with the U.S. Forest Service Pacific Southwest Research Station, Arcata at KBO's Humboldt Bay Bird Observatory, in Arcata, California. From this evaluation, five KBO interns were certified at the NABC Bander level and four certified at the Bander Trainer level.

Outreach and Education Integrated with Banding Efforts

KBO's continuing monitoring efforts have created many effective education and outreach opportunities that have reached hundreds of students, as well as many community members. KBO's overall education and outreach accomplishments are reported separately in greater detail (Kilby et al. 2012).

Bird banding provides a unique opportunity to educate the public and students about birds, their environment, and the connection between science and conservation. KBO continued to offer academic and public outreach opportunities in concordance with long-term monitoring efforts. More than 380 people visited our banding stations during field trips, bird walks, and demonstrations at CES sites and public parks. The Deer Creek Center and Willow Wind sites were especially active as readily accessible outdoor classrooms and laboratories. School and community group outreach programs and presentations were scheduled at these sites. These involved more than 250 Kindergarten through 12th-grade students and teachers from regional schools participating in KBO's Songbirds, Science, and Schools program (Kilby et al. 2012). Public banding demonstrations during KBO-hosted bird walks and other outreach events resulted in 137 visitors at mist banding stations.

As part of the International Migratory Bird Day annual festivals at Ashland and Klamath Falls, KBO held public banding demonstrations on 14 May (Table 5). The Ashland demonstration was conducted at North Mountain Park and the Klamath Falls event was conducted at Veteran's Park. Both of these events were well attended (Kilby et al. 2012).

Conclusion

Klamath Bird Observatory's long-term bird monitoring program utilizes multiple methods, at local and landscape scales, to monitor bird populations during the breeding and migration seasons. Integral components of this monitoring program are technical training and outreach efforts. Our program includes lands that are managed by the U.S. Department of Agriculture Forest Service, U.S. Department of Interior Bureau of Land Management, U.S. Fish and Wildlife Service, Bureau of Reclamation, National Park Service, and others. Data resulting from these efforts are contributed to several databases including the U.S. Geological Survey North American Bird Banding Laboratory, Institute for Bird Populations' Monitoring Avian Productivity and Survivorship Program, Klamath Bird Monitoring Network, Landbird Monitoring Network of the Americas, University of California Los Angeles Center for Tropical Research's migratory bird genetics and avian influenza projects, and Cornell Lab of Ornithology's Avian Knowledge Network.

We are collecting data on population trends, habitat relationships, and demographic parameters throughout the Klamath-Siskiyou Bioregion in order to identify bird conservation opportunities.

Results from KBO's long-term monitoring inform multiple audiences about both bird population status and health and species response to natural and anthropogenic habitat change. Results from these efforts inform bird conservation locally, regionally, and at the national and international levels. In 2012, KBO will continue working with our partners to maintain this long-term monitoring program contributing towards implementing our mission to advance bird and habitat conservation through science, education, and effective partnerships.

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KBO research and long-term monitoring efforts are conducted in collaboration with the U.S. Forest Service Pacific Southwest Research Station, Arcata. Cooperators who contribute to KBO's research, monitoring, and associated education and outreach efforts include: Anna May Family Foundation; Asa Wright Nature Centre; Ashland Rotary Club; Ashland School District and the Willow Wind Community Learning Center; Carpenter Foundation; City of Ashland Parks and Recreation Department and the North Mountain Park Nature Center; Collins Foundation; Collyer Hitchcock Family Fund; Cornell Lab of Ornithology; Deer Creek Center; Gray Family Fund of the Oregon Community Foundation; Gwladys and John Zurlo Charitable Trust; Harriman Rural Fire District; Institute for Bird Populations; JiJi Foundation; Juan Young Trust; Kinsman Foundation; Klamath County, Oregon; Mountaineers Foundation; National Fish and Wildlife Foundation; New Belgium Philanthropy; Northwest Nature Shop; PRBO Conservation Science; Rocky Point Resort; Sandra James Music Foundation; ScienceWorks Hands-On Museum; Siskiyou Field Institute; Southern Oregon University's Office of International Programs; University of California, Los Angeles Center for Tropical Research; U.S. Forest Service Fremont-Winema, Klamath, and Rogue River-Siskiyou National Forests and International Programs; Bureau of Land Management Oregon State Office, and Lakeview and Medford Districts; National Park Service Klamath Network and Oregon Caves National Monument; U.S. Fish and Wildlife Service Region 1 Non-game Landbird Program and Klamath Basin Refuge Complex; West Family Foundation; Wildlife Images; and KBO members and private sector contributors. We especially thank Amy Markus, Lance Lerum, and Dave Clayton of the USDA Forest Service; Mike Johnson and Dave Mauser of the U.S. Fish and Wildlife Service; Steve Hayner and Robin Snider of the Bureau of Land Management, and Lani Hickey of Klamath County Public Works. Also, we thank Barb Bresson, the Regional Avian Coordinator for the U.S. Forest Service and Bureau of Land Management.

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Table 1a. List of Focal Species from Partners in Flight Landbird Conservation Plans for coniferous forests of western Oregon and Washington (Altman 1999) and east-slope of the Cascade Mountains in Oregon and Washington (Altman 2000) for which the Klamath Bird Observatory gathers distribution, abundance, and demographic information at constant effort monitoring stations in southern Oregon.

Band-tailed Pigeon	Pygmy Nuthatch
Flammulated Owl	Brown Creeper
Vaux's Swift	Winter Wren
Rufous Hummingbird	Hermit Thrush
Lewis' Woodpecker	Varied Thrush
Williamson's Sapsucker	Orange-crowned Warbler
White-headed Woodpecker	Black-throated Gray Warbler
Pileated Woodpecker	Hermit Warbler
Olive-sided Flycatcher	Wilson's Warbler
Hammond's Flycatcher	Chipping Sparrow
Pacific-Slope Flycatcher	Lincoln's Sparrow
Hutton's Vireo	

Table 1b. List of Partners in Flight Watch List and Stewardship Species occurring in the Pacific (5) and Intermountain West (9) Avifaunal Biomes for which the Klamath Bird Observatory gathers distribution, abundance, and demographic information at constant effort monitoring stations in southern Oregon and northern California [*Watch List Species; **Stewardship Species] (Rich et al. 2004).

Flammulated Owl*	Steller's Jay**
Calliope Hummingbird*	Western Scrub-Jay**
Allen's Hummingbird*	Chestnut-backed Chickadee**
Rufous Hummingbird*	Oak Titmouse*
Lewis' Woodpecker*	Winter Wren**
Red-breasted Sapsucker**	Varied Thrush**
Williamson's Sapsucker**	Wrentit*
White-headed Woodpecker*	Black-throated Gray Warbler**
Olive-sided Flycatcher**	Hermit Warbler*
Willow Flycatcher*	Green-tailed Towhee**
Dusky Flycatcher**	Fox Sparrow**
Pacific-slope (Western) Flycatcher**	Golden-crowned Sparrow**
Gray Flycatcher**	

Table 1c. List of Focal Species from Partners in Flight Landbird Conservation Plans for coniferous forests of California (CalPIF 2002) and riparian habitats of California (RHJV 2004) for which the Klamath Bird Observatory gathers distribution, abundance, and demographic information at a constant effort monitoring station in northern California.

Flammulated Owl	Yellow Warbler
Pileated Woodpecker	Black-throated Gray Warbler
Olive-sided Flycatcher	MacGillivray's Warbler
Willow Flycatcher	Common Yellowthroat
Warbling Vireo	Wilson's Warbler
Vaux's Swift	Yellow-breasted Chat
Brown Creeper	Western Tanager
Red-breasted Nuthatch	Black-headed Grosbeak
Tree Swallow	Song Sparrow
Golden-crowned Kinglet	Fox Sparrow
Swainson's Thrush	Dark-eyed Junco

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Table 2. List of 2011 Klamath Bird Observatory constant effort monitoring stations (CES), target species isotope-sampling (ISO), public demonstration (DEM), and American Dipper nesting study sites by station code, ownership, and location [USFS = U.S. Department of Agriculture U.S. Forest Service; BLM = U.S. Department of Interior Bureau of Land Management; USFWS = U.S. Department of Interior U.S. Fish and Wildlife Service; NPS = U.S. Department of Interior National Park Service.]

Station Name	Code	Ownership	Latitude	Longitude	Location
Sevenmile Guard Station (CES)	7MIL	USFS, Winema NF	42° 42' 18"	122° 04' 26"	Sevenmile Creek, Winema NF, 6 miles W of Fort Klamath, Klamath Co., Oregon
Antelope Creek (CES)	ANT1	USFS, Klamath NF	41° 29' 32"	121° 56' 21"	Antelope Creek, 7 miles SSW of Tennant, Siskiyou Co., California
Ashland Creek Water Bridge (Nest Study)	ACWB	Private Property	42° 11' 59"	122° 42' 52"	Ashland Creek Water Bridge, Ashland, Jackson Co., Oregon
Ashland Watershed (CES)	ASWA	USFS, Rogue River NF	42° 06' 47"	122° 39' 40"	Ashland Creek watershed, 10.9 miles SE of Ashland, Jackson Co., Oregon
Rocky Point Cabin (CES)	CABN	USFWS, Upper Klamath Lake NWR	42° 29' 49"	122° 04' 47"	Rocky Point, Pelican Bay, 23.0 miles NW of Klamath Falls, Klamath Co., Oregon
Deer Creek Center (CES)	DECC	Deer Creek Center	42° 16' 31"	123° 38' 22"	Deer Creek Center, 1.2 miles N of Selma, Josephine Co., Oregon
Johnson Creek (CES)	JOHN	BLM, Ashland Resource Area	42° 14' 53"	122° 14' 02"	Johnson Creek, 19.2 miles ENE of Ashland, Klamath Co., Oregon
North Mountain Park (DEM)	NOMP	City of Ashland, Dept. Parks & Recreation	42° 12' 08"	122° 41' 51"	North Mountain Park, Ashland, Jackson Co., Oregon
Odessa Creek Campground (CES)	ODES	USFS, Winema NF	42° 25' 45"	122° 03' 28"	Odessa Creek Campground, 19.6 miles NW of Klamath Falls, Klamath Co., Oregon
Oregon Caves (CES)	ORCA	NPS, Oregon Caves NM	42° 05' 37"	123° 23' 47"	Oregon Caves NM, 14.0 miles SE of Cave Junction, Josephine Co., Oregon
Ross Lane X Harmony Lane (ISO)	ROHA	Private Property	42° 10' 41"	122° 41' 05"	Ross Lane X Harmony Lane, Ashland, Jackson Co., Oregon
Frain Ranch Campground (CES)	TOPS	BLM, Lakeview District	42° 01' 30"	122° 06' 05"	Frain Ranch Campground (Topsy Grade), 10.2 miles NW of Dorris, CA, Klamath Co., Oregon
Veteran's Park (DEM)	VET1	City of Klamath Falls	42° 13' 08"	121° 47' 17"	Veteran's Park, north shore Lake Ewauna, Klamath Falls, Klamath Co., Oregon
Wildlife Images (CES)	WIIM	BLM, Medford District	42° 29' 25"	123° 28' 48"	Rogue River at Wildlife Images, 3.5 miles SW of Merlin, Josephine Co., Oregon
Willow Wind (CES)	WIWI	Ashland School District	42° 11' 59"	122° 41' 26"	Willow Wind Community Learning Center, Ashland, Jackson Co., Oregon
Wood River Wetland (CES)	WOOD	BLM, Lakeview District	42° 35' 12"	121° 55' 48"	Wood River Wetland Area, Agency Lake, 3.3 miles W of Chiloquin, Klamath Co., Oregon

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Table 3a. 2011 effort summary of Klamath Bird Observatory's Eastside Cascades & Klamath Basin constant effort monitoring (CES) stations by site. [STATION (BLM = U.S. Department of Interior Bureau of Land Management, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each effort; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION				CAPTURES			NET	AVERAGE SPECIES	AVERAGE DAILY	AVERAGE DAILY	CAPTURES		
CODE	STATION (Ownership)	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	HOURS	RICHNESS	CAPTURES	RECAPS	PER NET HOUR	SURVEYS	PERSON DAYS
7MIL	Sevenmile Guard Station CES (USFS)	18	108	368	50	526	880	11.1	29.2	6.0	0.60	31	55
ANT1	Antelope Creek CES (USFS)	13	52	231	28	311	630	10.8	23.9	4.0	0.49	26	33
CABN	Rocky Point Cabin CES (USFWS)	28	189	1,194	52	1,435	1,394	16.7	51.3	6.8	1.03	51	89
JOHN	Johnson Creek CES (BLM)	14	44	283	21	348	844	11.3	24.9	3.1	0.41	28	29
ODES	Odessa Creek Campground CES (USFS)	16	78	345	26	449	680	11.8	28.1	4.9	0.66	31	39
TOPS	Frain Ranch Campground CES (BLM)	17	136	550	29	715	824	13.7	42.1	8.0	0.87	34	47
WOOD	Wood River Wetland CES (BLM)	17	143	482	29	654	831	10.3	38.5	8.4	0.79	34	41
Eastside Cascades Range & Klamath Basin Totals		123	750	3,453	235	4,438	6,083					235	333
Westside Cascades & Klamath Ranges Totals (Table 4a)		77	416	1,441	106	1,963	4,016					151	190
Eastside and Westside Totals		200	1,166	4,894	341	6,401	10,099					386	523

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Table 3b. 2011 effort summary of Klamath Bird Observatory's Eastside Cascades & Klamath Basin constant effort monitoring (CES) stations by site operated during the breeding season (mid-May through late-August). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each effort; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION		CAPTURES						NET	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	PERSON SURVEYS	
CODE	STATION	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	HOURS							DAYS
7MIL	Sevenmile Guard Station CES (USFS)	11	65	163	36	264	508	11.1	24.0	5.9	0.52	18	34	
ANT1	Antelope Creek CES (USFS)	6	44	114	24	182	295	13.8	30.3	7.3	0.62	12	15	
CABN	Rocky Point Cabin CES (USFWS)	10	84	325	18	427	486	15.8	42.7	8.4	0.88	19	32	
JOHN	Johnson Creek CES (BLM)	8	36	119	13	168	481	10.0	21.0	4.5	0.35	16	16	
ODES	Odessa Creek Campground CES (USFS)	9	47	143	14	204	370	10.1	22.7	5.2	0.55	17	24	
TOPS	Frain Ranch Campground CES (BLM)	10	106	328	18	452	499	13.8	45.2	10.6	0.91	20	27	
WOOD	Wood River Wetland CES (BLM)	10	130	284	16	430	489	10.2	43.0	13.0	0.88	20	26	
Eastside Cascades Range & Klamath Basin Totals		64	512	1,476	139	2,127	3,128					122	174	
Westside Cascades & Klamath Ranges Totals (Table 4b)		39	163	526	66	755	2,037					76	103	
Breeding Season Totals		103	675	2,002	205	2,882	5,165					198	277	

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Table 3c. 2011 effort summary of Klamath Bird Observatory's Eastside Cascades & Klamath Basin constant effort monitoring (CES) stations by site during the fall migration season (late-August through late-October). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each effort; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION		CAPTURES						AVERAGE	AVERAGE	AVERAGE	CAPTURES		PERSON
CODE	STATION	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	HOURS	SPECIES	DAILY	DAILY	PER		
								RICHNESS	CAPTURES	RECAPS	NET HOUR	SURVEYS	DAYS
7MIL	Sevenmile Guard Station CES (USFS)	7	43	205	14	262	372	11.1	37.4	6.1	0.70	13	21
ANT1	Antelope Creek CES (USFS)	7	8	117	4	129	335	8.1	18.4	1.1	0.39	14	19
CABN	Rocky Point Cabin CES (USFWS)	18	105	869	34	1,008	908	17.2	56.0	5.8	1.11	32	57
JOHN	Johnson Creek CES (BLM)	6	8	164	8	180	363	13.0	30.0	1.3	0.50	12	13
ODES	Odessa Creek Campground CES (USFS)	7	31	202	12	245	310	14.0	35.0	4.4	0.79	14	15
TOPS	Frain Ranch Campground CES (BLM)	7	30	222	11	263	325	13.6	37.6	4.3	0.81	14	20
WOOD	Wood River Wetland CES (BLM)	7	13	198	13	224	341	10.4	32.0	1.9	0.66	14	15
Eastside Cascades Range & Klamath Basin Totals		59	238	1,977	96	2,311	2,954					113	160
Westside Cascades & Klamath Ranges Totals (Table 4c)		38	253	921	40	1,208	1,979					75	87
Fall Migration Season Totals		97	491	2,898	136	3,519	4,933					188	247

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Table 4a. 2011 effort summary of Klamath Bird Observatory's Westside Cascades & Klamath Ranges constant-effort monitoring (CES) stations by site. Totals for the WIWI station does not include efforts outside the breeding and fall migration seasons (January through April and November through December; see Table 4d). [STATION (ASD = Ashland School District, BLM = U.S. Department of Interior Bureau of Land Management, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each effort; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION		CAPTURES					NET	AVERAGE SPECIES	AVERAGE DAILY	AVERAGE DAILY	CAPTURES		PERSON
CODE	STATION (Ownership)	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	HOURS	RICHNESS	CAPTURES	RECAPS	PER NET HOUR	SURVEYS	DAYS
ASWA	Ashland Watershed CES (USFS)	15	48	272	19	339	707	8.1	22.6	3.2	0.48	30	32
ORCA	Oregon Caves National Monument CES (NPS)	14	18	122	10	150	697	5.5	10.7	1.3	0.22	28	32
WIIM	Wildlife Images CES (BLM)	29	269	733	48	1,050	1,667	11.3	36.2	9.3	0.63	58	70
WIWI	Willow Wind CES (ASD)	19	81	314	29	424	945	9.9	22.3	4.3	0.45	35	56
Westside Cascades & Klamath Ranges Totals		77	416	1,441	106	1,963	4,016					151	190
Eastside Cascades Range & Klamath Basin Totals		123	750	3,453	235	4,438	6,083					235	333
Westside and Eastside Totals		200	1,166	4,894	341	6,401	10,099					386	523

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Table 4b. 2011 effort summary of Klamath Bird Observatory's Westside Cascades & Klamath Ranges constant-effort monitoring (CES) stations by site for the breeding season (mid-May through late-August). [STATION (ASD = Ashland School District, BLM = U.S. Department of Interior Bureau of Land Management, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each effort; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION		CAPTURES						AVERAGE SPECIES	AVERAGE DAILY	AVERAGE DAILY	CAPTURES PER		
CODE	STATION	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	NET HOURS	RICHNESS	CAPTURES	RECAPS	NET HOUR	SURVEYS	PERSON DAYS
ASWA	Ashland Watershed CES (USFS)	9	22	92	17	131	444	6.4	14.6	2.4	0.30	18	18
ORCA	Oregon Caves National Monument CES (NPS)	8	13	53	7	73	400	5.3	9.1	1.6	0.18	16	19
WIIM	Wildlife Images CES (BLM)	10	80	233	24	337	594	11.2	33.7	8.0	0.57	20	27
WIWI	Willow Wind CES (ASD)	12	48	148	18	214	599	8.3	17.8	4.0	0.36	22	39
Westside Cascades & Klamath Ranges Totals		39	163	526	66	755	2,037					76	103
Eastside Cascades Range & Klamath Basin Totals (Table 3b)		64	512	1,476	139	2,127	3,128					122	174
Breeding Season Totals		103	675	2,002	205	2,882	5,165					198	277

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Table 4c. 2011 effort summary of Klamath Bird Observatory's Westside Cascades & Klamath Ranges constant effort monitoring (CES) stations by site for the fall migration season (late-August through late-October). [STATION (ASD = Ashland School District, BLM = U.S. Department of Interior Bureau of Land Management, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each effort; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION		CAPTURES						NET	AVERAGE SPECIES	AVERAGE DAILY	AVERAGE DAILY	CAPTURES		PERSON
CODE	STATION	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	HOURS	RICHNESS	CAPTURES	RECAPS	NET HOUR	SURVEYS	DAYS	
ASWA	Ashland Watershed CES (USFS)	6	26	186	2	208	263	10.5	34.7	4.3	0.79	12	14	
ORCA	Oregon Caves National Monument CES (NPS)	6	5	69	3	77	297	5.8	12.8	0.8	0.26	12	13	
WIIM	Wildlife Images CES (BLM)	19	189	500	24	713	1,073	11.4	37.5	9.9	0.66	38	43	
WIWI	Willow Wind CES (ASD)	7	33	166	11	210	346	12.7	30.0	4.7	0.61	13	17	
Westside Cascades & Klamath Ranges Totals		38	253	921	40	1,208	1,979					75	87	
Eastside Cascades Range & Klamath Basin Totals (Table 3c)		59	238	1,977	96	2,311	2,954					113	160	
Fall Migration Season Totals		97	491	2,898	136	3,519	4,933					188	247	

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Table 4d. 2011 effort summary of Klamath Bird Observatory's Westside Cascades & Klamath Ranges constant-effort monitoring (CES) stations by site operated January-April and November-December, and single spring migration monitoring station. [STATION (ASD = Ashland School District, DCC = Deer Creek Center); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each effort; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION CODE	STATION (Ownership)	EFFORTS	RECAP	CAPTURES			NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
				NEW	UNBANDED	TOTAL							
DECC	Deer Creek Center (DCC)	7	8	135	9	152	267	9.0	21.7	1.1	0.57	12	24
WIWI	Willow Wind CES (ASD)	15	95	414	32	541	583	9.9	36.1	6.3	0.93	28	57
Outside Breeding and Fall Migration Seasons Totals		22	103	549	41	693	850					40	81

Table 5. 2011 effort summary of Klamath Bird Observatory's public demonstration, American Dipper nest study, and isotope-sampling efforts by site. [STATION (ASH = City of Ashland, KLF = City of Klamath Falls); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each effort; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION CODE	STATION (Ownership)	Effort Type	EFFORTS	RECAP	CAPTURES			NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
					NEW	UNBANDED	TOTAL							
ACWB	Ashland Creek (Private)	American Dipper Nest Study	1	0	2	0	2	2	N/A	2.0	N/A	1.00	0	3
NOMP	North Mountain Park (ASH)	Public Demonstration	1	1	13	0	14	20	7.0	14.0	1.0	0.69	0	3
ROHA	Ross Lane (Private)	Isotope-sampling	1	0	19	0	19	2	N/A	19.0	N/A	8.44	0	1
VET1	Veteran's Park (KLF)	Public Demonstration	1	0	26	1	27	19	12.0	27.0	0.0	1.44	0	3
Public Demonstration, American Dipper Nest Study, and Isotope-Sampling Totals			14	1	60	1	62	43					0	10