

Summary Report: Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring Station Efforts in the Klamath-Siskiyou Bioregion

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Cover photograph: Ruffed Grouse drumming at Rocky Point Field Station.



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Background

Klamath Bird Observatory (KBO) continued its comprehensive, long-term bird monitoring program in the Klamath-Siskiyou Bioregion in 2010. 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 US Forest Service Redwood Sciences Laboratory 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 2010 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. The methods are described in Ralph et al. (1993, 2004) and include mist net arrays, banding, area search and point count survey, vegetation survey, and soft tissue sampling (for DNA, stable isotope study, and avian influenza monitoring). KBO conducted integrated bird monitoring accordant to constant effort station (CES) methodology at 15 CES sites in 2010. We continued efforts at 11

CES sites that have been operated for 10 years or more, one site operated nine years, one site four years and one site operated three years. A new site was established at the Deer Creek Center, which was operated in this pilot year during the spring migration season only. Monitoring at all but the Deer Creek site 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 Jefferson Nature Center and Willow Wind Community Learning Center sites were operated 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 sites also provided early and late arrival and winter resident information for migratory species in southern Oregon's Rogue Valley.

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 14 locations include 8,768 birds of 105 species, captured during 13,567 net hours (number of 12 meter mist nets operated multiplied by time operated in hours). During the 253 banding efforts (796 person-days), 519 area search surveys were completed with 152 species detected (Tables 3a, 4a, 4d). 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.

Eastside Cascade Range and Klamath Basin

From May through August (breeding season), all eight Eastside Cascades Range and Klamath Basin CES stations 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 station which was scheduled for an increased effort frequency of thrice weekly.

At the eight eastern CES sites, a total of 4,788 birds were captured in 7,085 net hours between May and October during the 138 banding efforts with 428 person days (Table 3a). A total of 271 area search surveys were conducted.

During the breeding season, a total of 2,851 birds were captured in 3,857 net hours during 75 efforts (Table 3b). A total of 139 area search surveys were completed. During the fall migration season, a total of 1,937 birds were captured in 3,228 net hours during 63 efforts (Table 3c). A total of 132 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 (Table 3a). The Frain Ranch Campground sites had the highest capture rate (captures per net hour) and greatest average species richness. During the breeding season, the Sevenmile Guard Station 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 (Table 3c). The Frain Ranch Campground site had the highest capture rate and the greatest average species richness.

Three unusual species were encountered at Eastside Cascades and Klamath Basin sites during CES efforts. On 3 July, a Gray Catbird was captured at the Wood River Wetland site, determined to be a second-year (hatched in 2009) of unknown sex. The Gray Catbird is considered irregular (recorded less than once every year, but no less than once in five years on average) to casual (recorded less than once in 10 years, but no less than once in 20 years on average) in most of Oregon (outside of northeast Blue Mountains Ecoregion)(Contreras 2003). On 20 July, a Black-and-white Warbler was captured at the Odessa Creek Campground site, determined to be a second-year female. This capture was notable for the observation of breeding condition (presence of a developed brood patch indicating an active nesting individual). The Black-and-white Warbler is considered a regular transient west of the Rocky Mountains, with few records outside the spring and fall migration seasons in Oregon (Nehls 2003a). On 10 September, a Canada Warbler was captured at the Rocky Point Cabin site, determined to be a hatch-year (hatched in 2010) male. The Canada Warbler is considered casual in the Pacific Northwest with less than 10 Oregon records (Nehls 2003b), and this encounter an apparent first for Klamath County.

Westside Cascades and Klamath Ranges

From May through August (breeding season), the western CES sites were scheduled once per 10-day cycle (Period 1 beginning 1 May); with the exception of the Deer Creek Center site which was operated weekly April-May only. These sites had an increased frequency of efforts scheduled for the fall migration season. Beginning 1 September, the Wildlife Images site was scheduled once per three-day cycle through October. All other sites were scheduled once per week September through October. The Jefferson Nature Center site was scheduled weekly January-April and monthly November-December. The Willow Wind site was scheduled weekly January-April and thrice monthly November-December (Table 4d).

At the six western CES sites a total of 3,980 birds were captured in 6,482 net hours from May through October during the 115 banding efforts, with 368 person days (Table 4a). A total of 248 area search surveys were conducted.

During the breeding season, a total of 1,297 birds were captured in 2,948 net hours during 60 efforts (Table 4b). A total of 118 area search surveys were completed. During the fall migration season, a total of 2,140 birds were captured in 2,717 net hours during 55 efforts (Table 4c). A total of 99 area search surveys were completed. During the winter and spring (January-April and November-December) at the Deer Creek Center, Jefferson Nature Center and Willow Wind sites, a total of 928 birds were captured in 1,278 net hours during 34 efforts (Table 4d). A total of 52 area search surveys were completed.

Overall, the Wildlife Images site had the highest total captures, with a greater number of net hours than most of the other Westside sites (Table 4a). The Horse Creek Meadow site had the highest capture rate, while Willow Wind had the greatest average species richness. During the breeding season, Wildlife Images had the highest total captures and the greatest average species richness with Horse Creek Meadow with the highest capture rate (Table 4b). During fall, the Wildlife Images site, with the increased effort frequency, had the highest total captures (Table 4c). The Horse Creek Meadow site had the highest capture rate and greatest average species richness.

Public Demonstration, Isotope-sampling, and Rapid Ornithological Inventory Efforts

In addition to constant effort monitoring stations, mist netting and banding efforts completed in 2010 included public demonstration as a component of outreach events, target-species netting for isotope sampling (see Tissue Sampling section below), and a rapid ornithological inventory. 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 8 May. A total of nine efforts at five sites, one at Little Hyatt Lake and four along Bear Creek in the Ashland area, were completed for isotope-sampling as part of a attitudinal migrant study (see below). A rapid ornithological inventory, a one-time, two-day, two-night intensive survey and mist netting effort, was completed at the Fourmile Meadow restoration site on Winema National Forest. Totals for these efforts include 183 birds captured during 241 net hours (51 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 2010, KBO collected and contributed just over 1,000 feather samples to this project.

Avian Influenza Sampling

Since 2006, KBO has contributed to international efforts to collect samples of avian influenza to identify transmission paths in North American migratory birds in large-scale programs coordinated by CTR, Institute for Bird Populations, and Landbird Monitoring Network of the Americas. Information derived from the samples is also being used to further the goal of developing Influenza A vaccines. Avian viruses present within a bird's cloaca are relatively simple to safely collect by swab insertion. The swab samples of skin cells and fecal matter are stored in a preservative for later processing and analysis. Preliminary results from these efforts were published during the year (Fuller et al. 2010). In 2010, CTR biologists joined KBO's banding efforts for follow up sampling at target sites, during which 533 birds were sampled.

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 can determine if 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, and Red-winged Blackbird at sites above snow-line and below snow-line proximate to southern end of the Rogue Valley. In 2010, with sampling continuing at sites below snow-line through the winter; 129 samples were collected.

Technical Training

In 2010, 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 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.

A total of eleven intern students 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 International Studies Program, the US Forest Service International Program, and the National Park Service Park Flight Program. In addition, KBO education and science staff received mist netting, bird handling, and banding training totaling 25 person-days.

We also provided experiential training in banding techniques during monitoring efforts at CES sites to partnering biologists and volunteers from the Army Corps of Engineers, Bureau of Land Management, National Park Service, and US Forest Service. These professional-level training sessions totaled 26 person days.

Two banding techniques workshops were presented, one in May at the Deer Creek Center and another in July 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 51 individuals.

Within the spirit of Partners in Flight, KBO continues a commitment to international capacity building through technical training. In 2010 we continued working with the U.S. National Park Service Park Flight Program and the U.S. Forest Service International Program's Wings Across the Americas to host five banding interns from Perú, Columbia and Trinidad and Tobago. KBO also participated in three international training efforts. In November we co-sponsored, with the Costa Rica Bird Observatories and Partners in Flight MesoAmerican Program an intensive banding workshop at the Cerro de la Muerta Field Station, with former KBO international interns assisting as instructors.

In a celebration of community cooperation, KBO welcomed the contributions of several local volunteers who offered 55 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 coordinated an individual NABC Bander certification evaluation sessions and contributed to a group session in partnership with the U.S. Forest Service Redwood Sciences Laboratory at KBO's Humboldt Bay Bird Observatory, in Arcata, California. From these evaluations, one of our interns was certified at the NABC Bander Assistant level and eight at the Bander level; three were also certified at the Bander Trainer level.

Outreach and Education Integrated with Banding Efforts

The continuing monitoring efforts conducted by KBO 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. 2011).

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 1,000 people visited our banding sites during field trips, bird-walks, and demonstrations at CES sites and public parks. The Jefferson Nature 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 700 Kindergarten through 12th-grade students and teachers from regional schools participating in KBO's Songbirds, Science, and Schools program (Kilby et al. 2011). Public banding demonstrations during KBO-hosted bird walks and other outreach events resulted in over 400 visitors at mist netting sites.

As part of the International Migratory Bird Day annual festivals at Ashland and Klamath Falls, KBO held public banding demonstrations on 8 May (Table 5). The Ashland demonstration was conducted at North Mountain Park site. The Klamath Falls event was conducted at Veteran's Park. Both of these events were well attended (Kilby et al. 2011). In addition, KBO interns assisted Lava Beds National Monument biologists during a bird banding demonstration at the Tule Lake Migratory Bird Festival on 15 May.

Conclusion

Klamath Bird Observatory's long-term bird monitoring program utilizes multiple methods, at a landscape level, 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 (USDA) Forest Service, U.S. Department of Interior (USDI) Bureau of Land Management, USDI Fish and Wildlife Service, USDI Bureau of Reclamation, USDI 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 2011, 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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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 2010 Klamath Bird Observatory constant effort monitoring station (CES), target species isotope-sampling (ISO), public demonstration (DEM), and rapid ornithological inventory (ROI) 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 Greenway (ISO)	ASGR	City of Ashland, Dept. Parks & Recreation	42° 12' 54"	122° 43' 05"	Ashland (Bear Creek) Greenway, Ashland, Jackson Co., Oregon
Ashland Pond (ISO)	ASPO	City of Ashland, Dept. Parks & Recreation	42° 12' 53"	122° 42' 52"	Ashland Pond, 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
Fourmile Meadow (ROI)	FOUM	USFS, Winema NF	42° 27' 00"	122° 06' 58"	Fourmile Meadow, 25 mi NW of Klamath Falls, Klamath Co., Oregon
Horse Creek Meadow (CES)	HCME	USFS, Rogue River NF	42° 23' 00"	123° 00' 00"	Horse Creek Meadow, 13.0 miles W of Merlin, Josephine Co., Oregon
Jefferson Nature Center (CES)	JENC	City of Medford, Jefferson Nature Center	42° 17' 59"	122° 50' 28"	Jefferson Nature Center, 2.0 miles N of Phoenix, Jackson 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
Little Hyatt Lake (ISO)	LIHY	BLM, Lakeview District	42° 09' 33"	122° 29' 04"	Little Hyatt Lake, Jackson Co., Oregon
Lynn-Newbury Park (ISO)	LNPK	Jackson County Parks	42° 14' 43"	122° 46' 28"	Lynn-Newbury Park, Talent, Jackson Co., Oregon
North Mountain Park (DEM)	NMTP	City of Ashland, Dept. Parks & Recreation	42° 12' 08"	122° 41' 51"	North Mountain Park, Ashland, Jackson Co., Oregon
North Mountain Park (ISO)	NMPA	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
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
Williamson River (CES)	WILL	USFS, Winema NF	42° 39' 22"	121° 51' 08"	Williamson River Campground, 5.5 miles NNE of Chiloquin, Klamath 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

Summary Report – Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring

Table 3a. 2010 effort summary of Klamath Bird Observatory's eight Eastside Cascades & Klamath Basin constant effort monitoring (CES) stations by site. [STATION (BLM = U.S. Department of Interior Bureau of Land Management, KFP = City of Klamath Falls Parks Department, 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 day; 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	NEW	UNBANDED		TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS		AVERAGE DAILY CAPTURES		CAPTURES PER NET HOUR		PERSON DAYS
7MIL	Sevenmile Guard Station CES (USFS)	17	121	661	60	842	943	13.6	49.5	7.1	0.89	27	74			
ANT1	Antelope Creek CES (USFS)	12	60	338	25	423	600	13.8	35.3	5.0	0.71	25	36			
CABN	Rocky Point Cabin CES (USFWS)	29	122	790	53	965	1554	14.0	33.3	4.2	0.62	62	114			
JOHN	Johnson Creek CES (BLM)	16	78	389	26	493	886	10.6	30.8	4.9	0.56	31	35			
ODES	Odessa Creek Campground CES (USFS)	16	51	275	13	339	718	12.1	21.2	3.2	0.47	31	42			
TOPS	Frain Ranch Campground CES (BLM)	16	149	602	21	772	766	14.9	48.3	9.3	1.01	33	45			
WILL	Williamson River Campground CES (USFS)	16	103	307	19	429	842	12.6	26.8	6.4	0.51	32	40			
WOOD	Wood River Wetland CES (BLM)	16	140	356	29	525	776	11.6	32.8	8.8	0.68	30	42			
Eastside Cascades Range & Klamath Basin Totals		138	824	3,718	246	4,788	7085					271	428			
Westside Cascades & Klamath Ranges Totals (Table 4a)		115	722	2,986	272	3,980	6482					248	368			
2010 Grand Totals		253	1,546	6,704	518	8,768	13567					519	796			

Summary Report – Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring

Table 3b. 2010 effort summary of Klamath Bird Observatory's eight 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 day; 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	EFFORTS		RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE		CAPTURES		PERSON DAYS
		SURVEYS	DAILY						SPECIES RICHNESS	DAILY	PER NET HOUR	DAILY	
7MIL	Sevenmile Guard Station CES (USFS)	10	95	423	55	573	562	16.7	57.3	9.5	1.02	16	57
ANT1	Antelope Creek CES (USFS)	6	41	149	19	209	301	15.3	34.8	6.8	0.69	12	17
CABN	Rocky Point Cabin CES (USFWS)	10	66	424	38	528	525	18.2	52.8	6.6	1.01	16	57
JOHN	Johnson Creek CES (BLM)	9	45	134	21	200	519	10.6	22.2	5.0	0.39	19	20
ODES	Odessa Creek Campground CES (USFS)	10	41	178	8	227	458	13.3	22.7	4.1	0.50	20	28
TOPS	Frain Ranch Campground CES (BLM)	10	109	376	13	498	468	15.4	49.8	10.9	1.06	17	30
WILL	Williamson River Campground CES (USFS)	10	80	154	14	248	519	13.0	24.8	8.0	0.48	20	27
WOOD	Wood River Wetland CES (BLM)	10	121	227	20	368	504	11.7	36.8	12.1	0.73	19	30
Eastside Cascades Range & Klamath Basin Totals													
		75	598	2,065	188	2,851	3857					139	266
Westside Cascades & Klamath Ranges Totals (Table 4b)													
		60	237	949	111	1,297	2948					118	174
Breeding Season Totals													
		135	835	3,014	299	4,148	6805					257	440

Summary Report – Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring

Table 3c. 2010 effort summary of Klamath Bird Observatory's eight 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 day; 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	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE		AVERAGE		CAPTURES		PERSON DAYS
								SPECIES RICHNESS	DAILY CAPTURES	DAILY RECAPS	PER NET HOUR			
7MIL	Sevenmile Guard Station CES (USFS)	7	26	238	5	269	381	9.1	38.4	3.7	0.71	11	17	
ANT1	Antelope Creek CES (USFS)	6	19	189	6	214	299	12.0	35.7	3.2	0.72	13	19	
CABN	Rocky Point Cabin CES (USFWS)	19	56	366	15	437	1030	11.8	23.0	2.9	0.42	46	57	
JOHN	Johnson Creek CES (BLM)	7	33	255	5	293	366	10.7	41.9	4.7	0.80	12	15	
ODES	Odessa Creek Campground CES (USFS)	6	10	97	5	112	260	10.0	18.7	1.7	0.43	11	14	
TOPS	Frain Ranch Campground CES (BLM)	6	40	226	8	274	298	14.0	45.7	6.7	0.92	16	15	
WILL	Williamson River Campground CES (USFS)	6	23	153	5	181	323	11.8	30.2	3.8	0.56	12	13	
WOOD	Wood River Wetland CES (BLM)	6	19	129	9	157	272	11.5	26.2	3.2	0.58	11	12	
Eastside Cascades Range & Klamath Basin Totals														
		63	226	1,653	58	1,937	3228					132	162	
Westside Cascades & Klamath Ranges Totals (Table 4c)														
		55	377	1,686	77	2,140	2717					99	132	
Fall Migration Season Totals														
		118	603	3,339	135	4,077	5945					231	294	

Summary Report – Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring

Table 4a. 2010 effort summary of Klamath Bird Observatory's six Westside Cascades & Klamath Ranges constant effort monitoring (CES) stations by site. Totals for the JENC and WIWI stations do not include efforts outside the breeding and fall migration seasons (January through April and November through December; see Table 4d). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, COM = City of Medford, 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 day; 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			NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	RECAPS	PER NET HOUR	CAPTURES	PERSON DAYS
ASWA	Ashland Watershed CES (USFS)	15	61	285	19	365	718	8.5	24.3	4.1	0.51	29	30	
HCME	Horse Creek Meadow CES (USFS)	15	64	326	23	413	359	12.3	27.5	4.3	1.15	28	35	
JENC*	Jefferson Nature Center CES (COM)	20	132	535	104	771	1,399	14.8	38.6	6.6	0.55	49	79	
ORCA	Oregon Caves National Monument CES (NPS)	14	27	168	18	213	701	7.1	15.2	1.9	0.30	29	33	
WIIM	Wildlife Images CES (BLM)	28	247	996	59	1,302	1,630	12.5	46.5	8.8	0.80	51	68	
WIWI*	Willow Wind CES (ASD)	23	191	676	49	916	1,675	15.3	39.8	8.3	0.55	62	123	
Westside Cascades & Klamath Ranges Totals		115	722	2,986	272	3,980	6,482					248	368	
Eastside Cascades Range & Klamath Basin Totals		138	824	3,718	246	4,788	7,085					271	428	
2010 Grand Totals		253	1,546	6,704	518	8,768	13,567					519	796	

Summary Report – Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring

Table 4b. 2010 effort summary of Klamath Bird Observatory's six Westside Cascades & Klamath Ranges constant effort monitoring (CES) stations by site for the breeding season (mid-May through late-August). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, COM = City of Medford, 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 day; 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	EFFORTS		RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE		AVERAGE		CAPTURES		PERSON DAYS
									SPECIES	DAILY	DAILY	PER			
ASWA	Ashland Watershed CES (USFS)	9	32	114	13	159	450	7.7	17.7	3.6	0.35	18	18		
HCME	Horse Creek Meadow CES (USFS)	9	38	121	14	173	215	10.8	19.2	4.2	0.80	18	23		
JENC	Jefferson Nature Center CES (COM)	11	38	157	14	209	593	9.9	19.0	3.5	0.35	21	31		
ORCA	Oregon Caves National Monument CES (NPS)	8	23	94	17	134	402	7.8	16.8	2.9	0.33	16	21		
WIIM	Wildlife Images CES (BLM)	10	58	271	27	356	569	12.3	35.6	5.8	0.63	18	29		
WIWI	Willow Wind CES (ASD)	13	48	192	26	266	719	11.7	20.5	3.7	0.37	27	52		
Westside Cascades & Klamath Ranges Totals		60	237	949	111	1,297	2,948					118	174		
Eastside Cascades Range & Klamath Basin Totals (Table 3b)		120	474	1,898	222	2,594	5,896					236	348		
Breeding Season Totals		180	711	2,847	333	3,891	8,845					354	522		

Summary Report – Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring

Table 4c. 2010 effort summary of Klamath Bird Observatory's six Westside Cascades & Klamath Ranges constant effort monitoring (CES) stations by site for the fall migration season (late-August through late-October). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, COM = City of Medford, 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 day; 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	EFFORTS		RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	PER NET HOUR	SURVEYS	PERSON DAYS
ASWA	Ashland Watershed CES (USFS)	6	29	171	6	206	268	9.8	34.3	4.8	0.77	11	12	
HCME	Horse Creek Meadow CES (USFS)	6	26	205	9	240	143	14.7	40.0	4.3	1.67	10	12	
JENC	Jefferson Nature Center CES (COM)	9	48	200	16	264	493	12.8	29.3	5.3	0.54	18	26	
ORCA	Oregon Caves National Monument CES (NPS)	6	4	74	1	79	300	6.3	13.2	0.7	0.26	13	12	
WIIM	Wildlife Images CES (BLM)	18	189	725	32	946	1,061	12.6	52.6	10.5	0.89	33	39	
WIWI	Willow Wind CES (ASD)	10	81	311	13	405	452	13.7	40.5	8.1	0.90	14	31	
Westside Cascades & Klamath Ranges Totals		55	377	1,686	77	2,140	2,717					99	132	
Eastside Cascades Range & Klamath Basin Totals (Table 3c)		63	226	1,653	58	1,937	3,228					132	162	
Fall Migration Season Totals		118	603	3,339	135	4,077	5,945					231	294	

Summary Report – Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring

Table 4d. 2010 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, COM = City of Medford, 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 day; 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	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	AVERAGE CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
DECC	Deer Creek Center (DCC)	10	24	245	11	280	268	9.7	28.0	2.4	1.05	16	44
JENC	Jefferson Nature Center CES (COM)	8	46	178	74	298	313	9.0	37.3	5.8	0.95	10	22
WIWI	Willow Wind CES (ASD)	16	104	233	13	350	697	9.1	21.9	6.5	0.50	26	52
Outside Breeding and Fall Migration Seasons Totals		18	174	656	98	928	1,278					52	118

Summary Report – Klamath Bird Observatory's 2010 Long-term Constant Effort Monitoring

Table 5. 2010 effort summary of Klamath Bird Observatory's public demonstration, rapid ornithological inventory, and isotope-sampling efforts by site. STATION (ASH = City of Ashland, BLM = Bureau of Land Management, KLF = City of Klamath Falls, USFS = US 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 day; 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	STATION (Ownership)	Effort Type	EFFORTS			RECAP		NEW	UNBANDED		TOTAL		NET HOURS		AVERAGE SPECIES RICHNESS		AVERAGE DAILY CAPTURES		AVERAGE DAILY RECAPS		CAPTURES PER NET HOUR		PERSON DAYS	
			1	0	1	0	1		0	1	0	2	3	2	2	2	2	2	2	2	2	2	2	2
ASGR	Ashland Greenway (ASH)	Isotope-sampling	1	0	1	0	1	2	3	2	2	2	2	2	2.0	3.0	0.0	0.0	1.38	0	2			
ASPO	Ashland Pond (ASH)	Isotope-sampling	1	0	4	0	4	2	6	5	6	5	5	5	3.0	6.0	0.0	0.0	1.22	0	2			
FOUM	Fourmile Meadow (USFS)	Rapid Ornithological Inventory	3	2	71	8	81	162	81	162	81	162	162	162	11.0	27.0	0.7	0.50	14	26				
LIHY	Little Hyatt Lake (BLM)	Isotope-sampling	5	0	16	15	31	24	31	24	31	24	24	24	2.6	6.2	0.0	1.27	0	10				
LNPk	Lynn-Newberry Park	Isotope-sampling	1	0	4	0	4	2	4	2	4	2	2	2	1.0	4.0	0.0	1.92	0	2				
NMPA	North Mountain Park (ASH)	Isotope-sampling	1	1	0	0	1	1	1	1	1	1	1	1	1.0	1.0	1.0	0.86	0	2				
NMTP	North Mountain Park (ASH)	Public Demonstration	1	1	34	2	37	29	37	29	37	29	29	29	8.0	37.0	1.0	1.30	0	4				
VET1	Veteran's Park (KLF)	Public Demonstration	1	1	19	0	20	16	20	16	20	16	16	16	6.0	20.0	1.0	1.26	0	3				
Public Demonstration, Isotope-sampling, and Rapid Ornithological Inventory Effort Total			14	5	149	29	183	241											14	51				