

# KLAMATH BOTULISM OUTBREAK

**M**ore than 60,000 waterfowl and shorebirds died of avian botulism last summer at the Lower Klamath and Tule Lake national wildlife refuges.

Botulism occurs naturally in the soil there. But high temperatures, which activate the botulism bacteria, and the scarcity of water, caused by a combination of drought and human-driven diversions, exacerbated this outbreak. It was the worst in anyone's memory.

The outbreak occurred primarily during August and September, which is when the refuges provide one of the few places in California where ducks can

molt safely. Ducks need big wetlands for molting because they lose their flight feathers for 30 to 60 days, making them vulnerable to predators.

The refuges are also a breeding ground, and a staging ground for migrating waterfowl. That means local birds and migrators were snared in the carnage.

But while the outbreak was horrific, it also provided an opportunity for insight: 127 of the dead were banded, so we can see where they came from. And of the 3,179 birds treated by wildlife rehabilitators, 834 were banded before being released, and 67 of them have been recov-

ered, mostly by hunters. That means we can see where they went when they left.

The data suggests that California-hatched birds comprised nearly half – if not more – of the botulism deaths.

And of the ducks that were treated, banded and released, 76% went to California. If all the estimated 56,000 ducks that died of botulism this summer had lived, there might've been another 43,000 ducks in California this winter.

**The bottom line:** Poor conditions at the Klamath refuges overwhelmingly hurt ducks that breed and winter all over California.

Dead birds filled airboats this summer (photo by USFWS)



The oldest banded botulism victim was a 13-year-old drake mallard. The one banded farthest from Klamath – 2,191 miles away in Alaska – was a 10-year-old bull sprig.



Of the 127 banded birds that died, 112 had been banded in California, and of those, 57 very likely hatched here.

California's breeding population supplies 60% of the mallards we harvest, and 19% of the most common ducks on our straps.

Mallards were the predominant victims, at 34% of all ducks picked up.

- Banded where they hatched
- Banded as young of the year (very likely hatched in California)
- Banded as adults, unknown hatch location

**16** of the banded birds that died were CWA egg salvage birds that'd been spared destruction by wildlife-friendly farmers, including a drake gadwall banded by children at this 2017 CWA camp, and a 9-year-old hen mallard.



Photo by Rebecca Fabbri



Birds paralyzed by botulism were treated and released (photo by Bird Ally X)

**834** ducks that recovered from botulism in the IKNWR "duck hospital" were banded and released.

**67** have been encountered since their release.

**60** were shot by hunters in 6 states (it's OK – they're safe to eat).

**51** were encountered in California, including one greenhead trapped (alive) by CWA biologists the day he was released from the hospital.

**2** were shot more than 1,400 miles away – drake green-winged teal shot in Arkansas and Texas.

**1** drake green-winged teal was hit by a car at the Stillwater National Wildlife Refuge in Nevada two weeks after his release.

Photo by Chris Montano Jr.

