WILD HOPE: Significant Otters
January 8th, 2025
EP: Geoff Luck / Sarah Arnoff
Producer: Katie Schuler | Editor: Penny Trams

	TIME CODE	VIDEO	AUDIO
1.	1:00:05:05		[WATER SPLASHES] **SUSAN ROSSO** I have one foraging that's straight out from them in mid channel, and I think it just went down. **RON EBY** Okay. I see where it went down. **SUSAN ROSSO** Two with pups. Ah, an otter looking and checking us out. **NARRATOR:** **FOR YEARS, VOLUNTEERS HAVE MONITORED SEA OTTERS IN THIS CALIFORNIA WATERWAY.**
2.	01:00:31:04		**RON EBY** The highest counts came in 2014. There was a total of about 120. **SUSAN ROSSO** Yeah, the whole population, you know, on the central coast is staying fairly stable. **NARRATOR:** **THESE CITIZEN SCIENTISTS HAVE BEEN DOCUMENTING THE OTTERS REBOUND HERE, AND WITNESSING A COINCIDING REVIVAL OF THE AREAS WETLANDS.** **BRENT HUGHES** We have this misconception that sea otters are just these cute, fuzzy animals that will hold hands in the ocean. I see them as these voracious predators controlling everything, all the way down to the plants

			and the sediments. Predators that keep the whole ecosystem intact.
3.	01:01:19:15	**GRAPHIC: TITLE** **SIGNIFICANT OTTERS**	[WATER SPLASHES]
4.	01:01:31:03	**LOWER THIRD:** ELKHORN SLOUGH CA **LOWER THIRD:** Brent Hughes Marine Ecologist	**BRENT HUGHES:** Elkhorn slough is one of the biggest salt marshes that we have here in California, right in the heart of Monterey Bay. There's just this unprecedented access to wildlife. And Elkhorn Slough is the best place in the world to see sea otters. [SEA OTTER VOCALIZING] **NARRATOR:** **OVER THE LAST 20 YEARS, ECOLOGIST BRENT HUGHES HAS BEEN RESEARCHING THE WILDLIFE IN ELKHORN SLOUGH.**
5.	01:02:02:05		**BRENT HUGHES:** Elkhorn Slough did not always look the way it looks now. **NARRATOR:** **IN THE EARLY 1700'S, THERE WERE UP TO 20,000 SEA OTTERS IN CALIFORNIA'S WATERS.** **THEN, OVER THE NEXT TWO CENTURIES, THE FUR TRADE EXPLODED, DECIMATING THE POPULATION.** **BRENT HUGHES** Sea otters have had a very rough time, I would say for the last 200 years. We thought that they were extinct in California for a period of about 20 years.
6.	01:02:38:05		**NARRATOR:** **IN ELKHORN SLOUGH, MISSING OTTERS WEREN'T THE ONLY PROBLEM.** [CONSTRUCTION NOISE]

			IN THE 1940'S, COASTAL DEVELOPMENT DREDGED CHANNELS, BUILT PIERS, AND TURNED THE HILLS BEYOND THE WATERFRONT INTO A PATCHWORK OF HOUSES, FARMS AND RANCH LAND THAT SPREAD HARMFUL POLLUTANTS ALL THROUGH THE SLOUGH. [CRAB PERCOLATES] **THINGS GOT EVEN WORSE IN THE FOLLOWING DECADES. CRAB POPULATIONS EXPLODED CAUSING EROSION AND A MASSIVE DIE OFF OF NATIVE SEAGRASS.**
7.	01:03:23:23		[CRABS SHUFFLING UNDER WATER] **BRENT HUGHES** Oh my gosh. Look at all these crabs. There's a ton of them here. And they're all the European green crab, the invasive, oh my gosh. [CRAB PERCOLATING] **NARRATOR:** **THIS SMALL ESTUARY NEAR THE SLOUGH STILL LOOKS LIKE ELKHORN DID AT ITS WORST.** **BRENT HUGHES** When they're out of water, this is the sound they make when they're breathing. [CRAB PERCOLATING] And what happened in Elkhorn Slough was if you, you went to the marsh, you know, say 20 years ago, you would hear this noise, this percolating sound. [CRAB PERCOLATING] And then all the, the crabs would be burrowing underneath and destabilizing the banks.

8.	01:04:13:00		[BOAT ENGINE RUMBLES] **BRENT HUGHES** I've worked in the slough for over a decade now and have seen erosion first hand. [WATER SLOSHING] Ooh. You see this? See those burrows in there? That's where the crabs are, essentially destabilizing the banks. The roots are holding the marsh all together, and you get all these crabs burrowing in there and then eating all the roots, the marsh just slumps off like a calving iceberg. Once that marsh falls into the water, it's basically gone forever. [WATER SPLASHES] **NARRATOR:** **WITH THE CRAB POPULATION OUT OF CONTROL AND FEW PREDATORS TO EAT THEM, ELKHORN SLOUGH WAS CRUMBLING INTO THE SEA.** **BUT THAT WAS ABOUT TO CHANGE — THANKS IN PART TO A SMALL, SECLUDED POPULATION OF OTTERS DESCENDED FROM SURVIVORS OF THE FUR TRADE.** [WATER SPLASHES] **BRENT HUGHES** Sea otters, they were rediscovered off the coast of Central California and they slowly have been expanding north and south.
9.	01:05:22:16		**NARRATOR:** **BY THE 1980’S, A FEW HAD MADE THEIR WAY INTO THE SLOUGH.**

			NEARBY, THE MONTEREY BAY AQUARIUM STARTED A PROGRAM TO RESCUE SEA OTTERS IN TROUBLE. **AQUARIUM STAFF FED & GROOMED THE RESCUES, AND WERE THE FIRST TO SUCCESSFULLY BOND AN ORPHANED PUP TO A SURROGATE MOM.** **WHEN LOOKING FOR A PLACE TO RELEASE REHABILITATED OTTERS, THE TEAM CHOSE ELKHORN SLOUGH, BECAUSE OF ITS CALM WATERS, ABUNDANT FOOD, AND THE SMALL GROUP OF WILD OTTERS THAT WERE NOW CALLING IT HOME.** [WATER SPLASHES] **OVER THE PAST 25 YEARS, THE AQUARIUM HAS RELEASED DOZENS OF PUPS HERE.** [WATER RIPPLING] **THE RESCUES THEN BRED WITH THE WILD POPULATION, PRODUCING SEVERAL NEW GENERATIONS OF OTTER PUPS.**
10.	01:06:28:02		**BRENT HUGHES** Currently the population in Elkhorn Slough stands around 100 to 120 animals depending on the year. **NARRATOR:** **SEA OTTERS ARE VORACIOUS CRAB-EATERS, AND THEIR RESURGENCE HAS HAD A BIG IMPACT ON EVERYTHING IN THE SLOUGH.** [WATER RIPPLING] **BRENT HUGHES** The big discovery was that by sea otters recolonizing this brand-new habitat and consuming these crabs in

			the salt marsh, they were protecting the salt marsh from eroding away. These sea otters eat 25% of their biomass every day. It would be like if you or I ate 20 burritos every day and still be hungry. That's what makes them super predators. Sometimes predators will consume so much that they'll have effects not only on their prey, but everything else below it. It acts as a keystone, meaning it's keeping the whole system together and without it, it would collapse. [WATER RIPPLING]
11.	01:07:34:09	**LOWER THIRD:** Kat Beheshti Marine Ecologist	**NARRATOR:** **HERE, EROSION HAS STOPPED ALMOST ENTIRELY, ESPECIALLY AROUND THE OTTERS' FAVORITE SECTIONS OF THE SLOUGH: THE EELGRASS MEADOWS.** [WATER SPLASHES] **KAT BEHESHTI** Eelgrass is a temperate seagrass species that occurs in California. And it has the largest geographic distribution. It's almost on every single continent. **NARRATOR:** **EELGRASS MEADOWS NOT ONLY PREVENT EROSION, THEY ALSO ACT AS SPAWNING GROUNDS AND HABITAT FOR MANY SPECIES - FROM SARGO AND PERCH TO SEA SLUGS.** **BUT LIKE MUCH ELSE IN THE SLOUGH, THE SEAGRASS MEADOWS HAD BEEN DECIMATED BY COASTAL DEVELOPMENT AND THE CRABS.** [WATER RIPPLING]
12.	01:08:24:21		**NARRATOR:**

		GRAPHIC: Trophic Cascade otters indirectly help seagrass by eating crabs that eat the sea hares.	**SINCE 2012, MARINE ECOLOGIST, KAT BEHESHTI, HAS BEEN RESEARCHING HOW TO RESTORE THIS COMPLEX ECOSYSTEM.** **KAT BEHESHTI** A lot of different animals utilize eelgrass habitat. But there are a lot of really, really small animals that are just as important, but often overlooked. **NARRATOR:** **PERFECTLY CAMOUFLAGED ALONG THE BLADES OF GRASS ARE TINY SEA SLUGS - CALLED TAYLOR'S SEA HARES.** [WATER RIPPLING] **THEY GRAZE ON MICROSCOPIC ALGAE – ALGAE THAT, LEFT UNTENDED SHADES OUT AND KILLS EELGRASS.** **ONE OF THEIR PRIMARY PREDATORS THOUGH…CRABS** **SO WHEN CRAB POPULATIONS EXPLODED, THE SEA HARE'S NUMBERS PLUMMETED - AND THE EELGRASS DIED.** **BUT NOW, THE OTTERS ARE BACK—AND THE CRABS ARE THEIR FAVORITE SNACK.** [WATER BUBBLING]
13.	01:09:31:18		**KAT BEHESHTI** By removing the abundance of the predator of these little baby cow slugs, there's more of those grazers that are cleaning the eelgrass and then the eelgrass benefits. **NARRATOR:** **ECOLOGISTS CALL THIS A TROPHIC CASCADE. THE OTTERS KEEP THE CRAB POPULATIONS IN**

			CHECK, ALLOWING GRAZERS, LIKE THE TAYLOR'S SEA HARE, TO KEEP THE GRASS HEALTHY. **THE GRASS, IN TURN, SUPPORTS MANY CREATURES ABOVE AND BELOW THE SURFACE.**
14.	01:10:08:15	**GRAPHIC**: A map of top-down view, pinging the otters locations over time	**KAT BEHESHTI** With the recovery and recolonization of sea otters into the estuary, eelgrass habitats started to expand. **NARRATOR:** **THE RECOVERED SEAGRASS MEADOWS NOW SERVE AS THE OTTERS' FAVORITE SPOTS TO REST, GROOM AND FORAGE.** **OTTER LOCATION DATA FROM CITIZEN SCIENTISTS, USGS AND LOCAL TOUR COMPANIES - REVEALED THAT WHEREVER THERE IS EELGRASS, OTTER NUMBERS ARE MORE THAN SIX TIMES HIGHER THAN IN UNVEGETATED PARTS OF THE CHANNEL.** [WATER RIPPLING] **THE RECOVERY OF THE SEAGRASS BEDS COINCIDED WITH THE RETURN OF THE SEA OTTERS, AND THEIR PREDATION OF THE CRABS.** [WATER RIPPLING]
15.	01:10:55:12		**NARRATOR:** **BUT WITH LARGE SWATHES OF THE SLOUGH STILL BARE, KAT AND BRENT DECIDED TO SUPERCHARGE THE RESTORATION.** **KAT BEHESHTI** Brent and I thought maybe we could give it like the kickstart it needed to continue to recover and expand to its historical distribution.
16.	01:11:20:00		**NARRATOR:**

			TODAY, KAT AND HER TEAM ARE TRANSPLANTING NEARLY 350 SHOOTS OF EELGRASS. **THEY BEGIN BY HARVESTING SHOOTS FROM A HEALTHY BED.** **THESE SHOOTS ARE THEN READY TO BE PLANTED IN A BARE SECTION OF THE SLOUGH.** [WATER SPLASHES] **AS PLANTING BEGINS, THE CLOCK STARTS TICKING. THE TEAM ONLY HAS A SHORT WINDOW BEFORE THE CURRENT CHANGES DIRECTION AND THEY LOSE VISIBILITY.** **MUCH LIKE YOU WOULD IN YOUR HOME GARDEN, THE TEAM USES A TROWEL AND A GARDEN STAKE TO SECURE A PAIR OF SHOOTS TO THE SEA FLOOR.**
17.	01:12:15:20		**KAT BEHESHTI** It's crazy how bad the visibility can get sometimes where you actually can put your fingers on your mask, and you can't see your fingers. And we've had the opposite problem where this crystal clear water is moving so fast that you actually have to anchor yourself to the ground because otherwise you'll float down the slough. [WATER SPLASHES] **NARRATOR:** **PLANTING EELGRASS IS A SLOG, BUT WELL-WORTH THE EFFORT. THEIR WORK HAS CREATED INSTANT HABITAT, AND THE EELGRASS ROOTS ARE STRENGTHENING THE SLOUGH'S FOUNDATION.**

			WHAT BEGAN AS SOME EXPERIMENTAL PLANTINGS IN 2015 HAVE RAPIDLY EXPANDED INTO ENORMOUS MEADOWS.
18.	01:13:13:20		**KAT BEHESHTI:** Look at the bed! Oh my gosh, you guys look, this is so exciting. This is so promising. Look at that visibility! [WATER RIPPLING] You can see how big they've gotten. Over a three-year period, those plots had expanded 8500% from their initial size. My favorite part is being mind-blown by what happens when I come back to these plots that we planted. **NARRATOR:** **MINDBLOWN BY THE RECOVERY OF THE EELGRASS... THE OTTERS, THE SLUGS.. AND THE SYSTEM AS A WHOLE.** **KAT BEHESHTI** It feels like one of the rare success stories of not only coastal restoration, but a way of managing this important natural resource. [BOAT ENGINE RUMBLES] **BRENT HUGHES** By adding, promoting the top predator in, and restoring food webs, we're finding that the success of trying to restore these habitats is even greater with the sea otter around. What the sea otter has done is kind of added stability back into the ecosystem so it can thrive.
	TRT: 14:36	**END CREDITS**	