

Chileno Valley Newt Brigade Learning Cards

Unit Overview: Our Newt Neighbors and How We Can Help

This project-based learning unit introduces students to the fascinating world of California newts (*Taricha torosa*) and the efforts of the Chileno Valley Newt Brigade, a local conservation group dedicated to protecting them. Through an inquiry-driven approach, students explore the natural history of California newts, the ecological challenges they face, and the role of community action in environmental conservation. Using a series of interactive photo cards, students engage in critical thinking, academic discourse, service learning, and hands-on activities to deepen their understanding and connect classroom learning to real-world stewardship.

Learning Goals

- **Science:** Understand the ecological role of amphibians, the importance of biodiversity, and the concept of adaptations.
- **Social Studies:** Examine the role of community action in addressing environmental challenges.
- **Language Arts:** Develop observation and inquiry skills, articulate findings, and create persuasive conservation messages.
- **STEAM Integration:** Design and model solutions for environmental conservation issues.

Outcomes

By the end of this unit, students will:

1. Appreciate the ecological importance of California newts and the challenges they face.
2. Understand how local conservation groups, like the Chileno Valley Newt Brigade, play a critical role in protecting wildlife.
3. Gain practical skills in scientific observation, creative problem-solving, and community engagement.
4. Feel empowered to take action in their own communities to support biodiversity and ecological health.

Unit Components

1. **Photo Cards with Prompts** - sets of inquiry cards that students explore in pairs or small groups. The cards are flexible and can be detached and used in any order a facilitator thinks is appropriate.
 - Each card features a high-quality photograph of California newts with related information about them and the story of the Chileno Valley Newt Brigade's efforts to protect the newts during their annual migration.
 - Back-of-card prompts encourage observation, questioning, and connections. A Teacher Guide (what you are reading right now) contains follow up content to enhance student learning and understanding.
 - [Our Newt Neighbors and How We Can Help](#)- corresponding Google slide deck aligned with the photo cards.
2. **Suggested Teaching Strategy:**
 - a. Present a photo card to a group of 2-3 students along with the prompt(s) on the back side of the card.
 - b. Students discuss the prompts within their groups.
 - c. The teacher re-engages the whole class to share ideas and questions.
 - d. The teacher deepens and enriches student learning by presenting the relevant content from this Teacher's Guide.
 - e. Students demonstrate understanding through note-taking, exit tickets, and final projects.
3. **Content Resource for Teachers-** Youtube video- [The California Newt- It's Not a Movie Star Life!](#)

Content Vocabulary

Word(s)	Definition
newt	A newt is a small amphibian—basically a kind of salamander—that usually lives part of its life in water and part on land. Newts have smooth, moist skin, long tails, and can regenerate body parts like tails and even limbs.

salamander	A salamander is an amphibian with a soft, moist body, a long tail, and typically four short legs. Salamanders usually live in damp places and many begin life in water, breathing through gills, then later develop lungs for life on land.
amphibian	An amphibian is a cold-blooded vertebrate animal that typically lives part of its life in water and part on land. Amphibians usually hatch from eggs in water, breathe with gills as young, and later develop lungs and legs as they grow.
habitat	A habitat is the natural home or environment where a plant or animal lives and gets what it needs to survive—such as food, water, shelter, and space.
riparian	Riparian describes areas of land that are next to or along rivers, streams, creeks, or other freshwater bodies.
Oak woodlands	<p>Oak woodlands are natural ecosystems dominated by oak trees, with a mix of grasses, shrubs, and wildflowers growing beneath them. These habitats support a wide variety of plants and animals and are common in parts of California.</p> <p>Oak woodlands provide food, shelter, and shade, and play an important role in soil health, water conservation, and wildlife habitat.</p>
conservation	Conservation is the careful protection and wise use of natural resources—such as plants, animals, water, soil, and habitats—so they can stay healthy and available for the future.

migrate	To migrate means to move from one place to another—often seasonally—especially for animals traveling to find food, warmer climates, or places to reproduce.
biodiversity	Biodiversity is the variety of living things in a place, including different plants, animals, insects, and microorganisms, as well as the habitats and ecosystems they form together.
Citizen science	Citizen science is scientific research that involves everyday people—like students, families, and community members—working with scientists to collect data, make observations, and help answer real scientific questions.
Service learning project	A service learning project is a learning experience where students take part in a community service activity that is connected to what they are studying in school. It combines hands-on work with reflection and learning, helping students make a positive impact while understanding real-world issues.
Wildlife crossings	Wildlife crossings are structures like overpasses, underpasses, or bridges that allow animals to safely cross roads, highways, or other human-made barriers. They help prevent accidents, protect wildlife, and connect natural habitats that might otherwise be separated.

Photo Card	Inquiry Questions/Prompts	Teacher Content to Share with Students	Additional Resources
Photo Card #1 The Cover- Our Newt Neighbors and How We Can Help	NA	NA	NA
Engage Photo card #2 California newt crossing a road with an approaching car. 1 session	What's happening in this photo? What might happen next? How can people help decrease and/or prevent animals like California newts from being run over by cars?	NA	Talk Science Primer - how to lead and encourage academic discourse Talk Moves Checklist Beetles Project Discussion routines
Explore Photo card #3 Sally Gale and members of the Chileno Valley Newt Brigade 1 session	This woman, along with other volunteers, works to help newts and other animals get across the road safely. How do you think they might accomplish this?	Students hear the story of how the Chileno Valley Newt Brigade began. Lori Eanes' documentary, " The Chileno Valley Newt Brigade ." Password- newt	Chileno Valley Newt Brigade website

		<p>After hearing the story of Sally Gale and the Chileno Valley Newt Brigade, the teacher leads a follow up discussion.</p> <p>What is the main goal of the Chileno Valley Newt Brigade?</p> <p>To help newts safely cross roads during their migration.</p> <p>Why do the newts need assistance crossing the roads?</p> <p>They are at risk of being run over by vehicles during their migration to breeding grounds.</p> <p>How does Sally Gale contribute to the newt conservation efforts?</p> <p>She leads the brigade and organizes volunteers to assist the newts.</p>	
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		<p>What can we learn from the actions of the Chileno Valley Newt Brigade?</p> <p>The importance of community involvement in wildlife conservation.</p>	
<p>Photo card #4</p> <p>Newt brigadier in full gear.</p> <p>1 session</p>	<ul style="list-style-type: none"> • What do you notice about this Chileno Valley Newt Brigadier? • How is she dressed and why? • What tools or equipment does she have, and how do you think she uses them? 	<p>Volunteers with the Chileno Valley Newt Brigade take specific precautions and utilize essential gear to ensure their safety, assist newts across roads, and collect valuable citizen science data:</p> <p>Attire: Given the often cold, windy, and rainy conditions during shifts, volunteers wear warm, waterproof clothing and shoes. Reflective vests enhance visibility to oncoming traffic.</p> <p>Equipment:</p>	

		<p>Buckets: Used to transport multiple newts safely across roads and to carry other tools.</p> <p>Spatulas: Assist in gently removing deceased newts from the roadway.</p> <p>Pennies: Placed next to newts when photographing to provide a size reference.</p> <p>Smartphones with iNaturalist App: Capture and upload photos of newts to contribute to citizen science data to the iNaturalist app.</p> <p>Flashlights: Essential for navigating dark conditions and spotting newts on the road.</p> <p>These measures collectively promote the safety of both volunteers and newts while</p>	
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		supporting conservation efforts.	
<p>Photo card #5</p> <p>Laguna Lake</p> <p>1 session</p>	<p>Look closely at the photo of Laguna Lake and surrounding areas.</p> <ul style="list-style-type: none"> • What do you notice? • What do you wonder? • Does this place remind you of anything? 	<p>Laguna Lake is a shallow, year-round natural lake located on Chileno Valley Road in northern California, straddling the Sonoma-Marin county line. Covering 200 acres, it serves as the source of Chileno Creek and provides critical habitat for a diverse range of wildlife.</p> <p>The lake supports various amphibians and reptiles, including California newts, rough-skinned newts, Sierran tree frogs, California slender salamanders, Ensatina, arboreal salamanders, California red-legged frogs, western toads, western pond turtles,</p>	

		<p>and garter snakes. These species rely on the lake and its surrounding wetlands for breeding and foraging.The Press Democrat+2chilenovalleynewsbrigade.org+2sfgate.com+2</p> <p>In addition to amphibians and reptiles, Laguna Lake is extensively used by migrating and breeding waterfowl, such as whistling swans (<i>Cygnus columbianus</i>) during winter. The lake's diverse habitats support a rich array of wildlife, or biodiversity, throughout the year.</p>	
<p>Photo card #6</p> <p>Additional species found on Chileno Valley Road that are also in danger from cars.</p>	<ul style="list-style-type: none"> • Which of these animals have you seen? • What do you know about them? • Which ones are new to you? 	<p>Optional- Teacher provides research time for students to learn more about the other animals that live in the Laguna Lake ecosystem.</p>	<p>NA</p>

Multiple sessions	<ul style="list-style-type: none"> • What questions do you have about any of them? • 	<p>Create Wildlife Trading Cards – Design cards with images, facts, and fun facts about different species.</p> <p>Build a Diorama or 3D Model – Show the Laguna Lake habitat and where different animals live and interact.</p> <p>Write an Animal Profile – Create a mini-report or digital slideshow about one species, including its habitat, diet, and role in the ecosystem.</p> <p>Make a Food Web Poster – Illustrate how different plants and animals around Laguna Lake are connected.</p> <p>Perform a Skit or Puppet Show – Act out a day in the life of a local animal, including the challenges it faces.</p> <p>Design a Conservation Poster – Highlight threats to a chosen species and ways</p>	
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		<p>to help protect it.</p> <p>Create a Field Guide Booklet – Include sketches, tracks, and descriptions of wildlife that could be seen at Laguna Lake.</p> <p>Use Storytelling or Comics – Tell a story from the point of view of a newt, frog, or turtle living by the lake.</p>	
<p>Photo card #7</p> <p>iNaturalist data</p> <p>1 session</p>	<ul style="list-style-type: none"> • What do you notice in the graph? • What questions come to mind after looking at it? • What does the graph help you understand or figure out? • Based on the data, what do you think the Chileno Valley Newt Brigade should do next? 	<p>The graph shows a mix of conservation effort and natural factors influencing newt migration and rescue numbers over time. From Year 1 to Year 4, the increase in rescued newts likely reflects improved effort—more volunteers, better organization, and longer patrols each night. In Year 5 (2023–24), there was a huge spike in juvenile newts, probably due to heavy winter storms</p>	<p>1. What trends do you notice in the number of newts rescued from Year 1 to Year 6?</p> <hr/> <p>2. Between Years 1 and 4, the number of newts rescued increased. What do you think helped make this happen?</p> <hr/> <p>3. In Year 5 (2023–24), the number of newts rescued jumped</p>

	<ul style="list-style-type: none"> • 	<p>triggering increased migration and a very productive breeding season the year before. Despite a strong rescue operation, the most recent season (2024–25) saw a decline in numbers.</p> <p>Currently, it is estimated that the Chileno Valley Newt Brigade rescues about 80% of newts attempting to cross the road. To fully understand the patterns in the data, it's important to consider volunteer effort (such as person-hours) alongside biological factors like precipitation and breeding cycles. Interpreting the graph requires looking at both the current migration year and biological events from previous years.</p>	<p>dramatically. Scientists think this was because:</p> <ul style="list-style-type: none"> • There were many more juvenile newts migrating. • Heavy winter storms likely caused more newts to be active. Why might storms and juvenile newts affect the numbers this way? <hr/> <p>4. In Year 6 (2024–25), the numbers went down even though the rescue team was working well. What are some possible reasons for this?</p> <hr/> <p>5. The Newt Brigade rescues about 80% of newts trying to cross the road. Why do you think rescue efforts are</p>
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			<p>important for the newts' survival?</p> <hr/> <p>6. Why is it important to consider both volunteer effort (like how many people and hours spent) and biological factors (like weather and breeding cycles) when looking at these numbers?</p> <hr/> <p>7. What questions would you ask experts like Sally or Gary to learn more about the newt rescue program and the migration patterns?</p>
<p>Explain</p> <p>Photo card #8</p>	<p>Driving Question:</p> <p>How can we help the Chileno Valley Newt Brigade</p>	<p>Students generate and share ideas. Teachers and students decide upon a project(s) to help support</p>	<p>Chileno Valley Newt Brigade website</p>

<p>Students generate ideas to educate the public and/or raise money for CVNB</p> <p>Multiple sessions</p>	<p>continue to protect California Newts and other species impacted by dangerous road crossings?</p>	<p>the Chileno Valley Newt Brigade.</p> <p>Students spend time becoming “experts” on California newts before creating their projects. This will take several sessions. The CVNB website is a good internet resource to research.</p> <p>Public Education Projects:</p> <p>Create Informational Posters or Brochures – Display them at school, libraries, or local stores to raise awareness about the CVNB and local wildlife.</p> <p>Host a “Newt Night” Event – Invite families and community members to learn about newts through presentations, student exhibits, and short films.</p> <p>Design and Share Social Media Campaigns – Create</p>	
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		<p>digital content (videos, infographics, reels) to spread awareness online.</p> <p>Write and Perform a Song, Rap, or Poem – Use music or spoken word to creatively explain the importance of protecting newts.</p> <p>Make a Short Documentary – Interview CVNB volunteers and include visuals of the habitat and the migration effort.</p> <p>Lead a School-Wide Assembly or Morning Announcements – Share facts and conservation tips with fellow students.</p> <p>Develop an Educational Game or Quiz – Teach others about the newts and their ecosystem through interactive play.</p> <p>Fundraising & Support Projects:</p>	
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		<p>Organize a Walk-a-Thon or “Hop for Newts” Event – Raise money through pledges and community involvement.</p> <p>Sell Student-Made Art or Crafts – Create newt-themed bookmarks, pins, or stickers to raise funds.</p> <p>Host a Bake Sale with a Wildlife Theme – Include information tables or trivia for added education.</p> <p>Create and Sell a “Newt Calendar” – Use student artwork and facts about wildlife for each month.</p> <p>Apply for Mini-Grants or Contact Local Businesses – Help students write letters or proposals for sponsorship or support for CVNB.</p> <p>Design/Engineering Projects:</p> <p>Build and Display Model Critter Crossings – Show</p>	
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		<p>how these structures can help protect newts and other animals.</p> <p>Design Newt Warning Signs – Post mock-up signs to raise awareness about migration seasons and safe driving.</p> <p>Create a Habitat Restoration Plan – Propose ways to improve the newts' ecosystem with diagrams and action steps.</p>	
<p>Photo card #11</p> <p>The California Newt</p> <p>Multiple sessions as students need to become experts on California newts in order to educate others and/or to fundraise for the Chileno Valley Newt Brigade.</p>	<p>What do you notice? What do you wonder? What does the newt remind you of? How do you think the external and internal structures of the newt help it survive?</p>	<ul style="list-style-type: none"> • Students share their observations and explanations in a whole class discussion. • Students make scientific sketches of a California newt including their observations, questions, and analogies. 	<p>Interview an Organism- a lesson to use instead of, or in addition to the prompts on the back of the card.</p> <p>Introduction to ABCDE Scientific sketching</p>

<p>Extend (Not a photo card)</p> <p>Critter Crossing Designs</p> <p>Multiple sessions</p>	<p>What solutions can you come up with to help California newts and other animals cross roads safely?</p>	<p>Students study the real life challenge of creating a sustainable solution for newts to cross safely across the road without volunteers.</p> <p>They design and engineer critter crossings from recycled materials.</p> <p>Students prepare written and/or oral presentations of their models.</p>	<p>National Geographic Wildlife Crossings</p> <p>Article- There are Teeny Tiny Underpasses for Salamanders in Massachusetts</p> <p>Wildlife Design Challenge</p>
<p>Photo Card #11</p> <p>Quote</p>	<p>What does this quote mean to you?</p>	<p>Possible ways to engage/respond to the quote:</p> <p>1. Reflect and Discuss</p> <ul style="list-style-type: none"> ● Journal response: Students write in their journals about what the quote means to them personally. Example prompts: 	

		<ul style="list-style-type: none">○ “What does it mean to take care of the planet yourself?”○ “How does the work of the Newt Brigade show that one person (or a small group) can make a difference?” <ul style="list-style-type: none">● Class discussion circle: Students share examples of times they helped the environment or could help in the future. <p>2. Make a Pledge</p> <ul style="list-style-type: none">● Personal environmental pledge: Each student writes or draws one thing they	
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		<p>will do this year to help the environment, inspired by the newt conservation effort. Examples:</p> <ul style="list-style-type: none">○ Picking up litter on their street○ Helping pollinator plants in a garden○ Educating friends and family about local wildlife <p>● Class pledge board: Display all student pledges in the classroom or hallway as a visual reminder of collective action.</p>	
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		<p>3. Art and Creativity</p> <ul style="list-style-type: none"> • Quote posters: Students illustrate the Robert Swan quote with images of local wildlife or stewardship actions. • Comic strips or storyboards: Depict a “heroic act” of a kid (or group) helping an animal or habitat, tying back to the newt-saving work. <p>4. Community Action Projects</p> <ul style="list-style-type: none"> • Mini stewardship projects: Students identify a small project they can do at school or home to protect local wildlife or habitats, e.g., building a pollinator 	
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		<p>garden, creating a “wildlife crossing” model, or cleaning up a nearby creek.</p> <ul style="list-style-type: none"> ● Citizen science challenge: Students participate in a local monitoring project (like counting newts or other wildlife sightings) and reflect on how their actions contribute to science. <p>5. Cause-and-Effect Exploration</p> <ul style="list-style-type: none"> ● Impact map activity: Students draw a diagram showing: <ul style="list-style-type: none"> ○ The problem (newts being run over) → actions taken (volunteers helping them 	
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		<p>cross roads) → results (more newts survive, ecosystem benefits).</p> <ul style="list-style-type: none"> ● Discussion: Relate this to the quote: “If we all wait for someone else to act, nothing gets done.” <p>6. Role-Play and Debate</p> <ul style="list-style-type: none"> ● Newt Brigade simulation: Assign roles like “newt volunteer,” “local driver,” and “wildlife scientist.” Students act out solutions and discuss how everyone can play a part. ● Debate: “Who is responsible for saving the 	
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		<p>planet—individuals, government, or everyone together?”</p> <p>7. Extend Learning with Technology</p> <ul style="list-style-type: none"> • Digital storytelling: Students create a short video showing how they or their class could help wildlife, ending with the quote. • Class blog or social media post: Students write about their stewardship experience and encourage others to take action. 	
Evaluate:	<p>How did you feel about this project?</p> <p>What did you learn?</p>	Students complete self assessments about their projects.	<p>PBLWorks- Self Reflection on Project</p> <p>Edutopia- Evaluation with Project-based Learning</p>

1 session		Students receive feedback from the public including CVNB members.	
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