American Kestrel Northeast Region
5th Annual Nest Box Program Report – 2022

Northeast region includes New England & Mid-Atlantic states: DE, CT, MA, ME, MD, NH, NJ, NY, PA, VA, VT

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NYC photos by Francois Portmann (SERIES - Francois Portmann Photography (fotoportmann.com)

Never doubt that a small group of thoughtful, committed, citizens can change the world. Indeed, it is the only thing that ever has.

Margaret Mead

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Kestrel with NYC's One World Trade Center in background (Photo by F. Portmann)

Top 10 American kestrel nest box program states in northeast region

Data is from kestrel nest box program managers in 10 northeast states from Virginia to Maine. The total 2022 banding-age nestling count of **4,726** includes five new contributors not included in the 2021 count. Counts limited to those received from contributors in both 2021 and 2022 are:

2021 banding-age nestling count: **4,036** 2022 banding-age nestling count: **4,676** one-year % increase: **16%**

1. **Pennsylvania: 2,060** (up 17% from 1,764 in 2021)
   74 by Emily H. Thomas and Don Watts in northwest PA (up 80% from 41 in 2021)
   418 by PA Game Commission, SE Region, led by Lauren Ferreri & Dan Mummert (up 11% from 377 in 2021)
   149 by Paul Karner and Jere Schade in Northampton County (down 20% from 186 in 2021)
   646 by Central PA Conservancy, led by Steve Eisenhauer (up 33% from 485 in 2021)
   87 by Shaver's Creek Environmental Center, led by Jon Kauffman (up 64% from 53 in 2021)
   44 by Jim Moffett in Chester & Berks Counties (up 36% from 35 in 2021)
   118 by Hawk Mt. Sanctuary in Berks County, led by JF Therrien (up 9% from 108 in 2021)
   75 by Hershey Area Raptor Partnership, led by McKelvie, Holzman & Becker (up 7% from 70 in 2021)
   273 by Devich Farbotnik in Bucks County (up 7% from 256 in 2021)
   75 by Jere Schade and Steve Benningfield in Bucks County (up 29% from 58 in 2021)
   101 by PA Game Commission, NE Region, led by Mario Giazzon (up 6% from 95 in 2021)
2. **Virginia: 1,064** (up 27% from 840 in 2021)
   298 by Lance & Jill Morrow in Shenandoah Valley (up 5% from 283 in 2021)
   621 by Alan Williams and associates (up 57% from 395 in 2021)
   145 by Highland County Kestrel Project, led by Patti Reum (down 10% from 162 in 2021)
3. **New Jersey: 440** (up 22% from 360 in 2021)
   66 by Friends of Hopewell Valley Open Space (up 43% from 46 in 2021)
   11 by Raritan Headwaters and Morris County Parks (up 37% from 8 in 2021)
   139 by Natural Lands in southern NJ, led by Steve Eisenhauer (up 48% from 94 in 2021)
   178 by NJDEP/ENSP and Duke Farms in central and northern NJ, led by Bill Pitts (up 6% from 168 in 2021)
   46 by John Smallwood in Sussex and Warren Counties (up 5% from 44 in 2021)
4. **Connecticut: 319** (down 5% from 336 in 2021)
   167 Northeast CT Kestrel Project, led by Tom Sayers (up 2% from 164 in 2021)
   147 Northwest and Northcentral CT Project, by Art Gingert and Mike Dudek (down 12% from 167 in 2021)
   5 by Larry Fischer (same as 2021)
5. **New Hampshire: 275** (up 37% from 200 in 2021)
   4 by Mark Manske associate (down from 9 in 2021)
   266 by Steve Wheeler (up 40% from 191 in 2021) – about 6 boxes fledged before he got to them
   5 by VT Institute of Natural Science (new entry for 2022)
6. **New York: 221** (down 23% from 288 in 2021) *not all boxes checked this year
   160 by Mark Manske in northern NY (down from 2021 since family illness prevented full count)*
   22 by Manske associate in western NY (up 32% from 7 in 2021)
   8 by Manske associate in Washington Co. (new entry)
   31 NY Iraquois NWR and nearby WMAs by Carl Zenger (up 72% from 18 in 2021)
7. **Vermont: 155** (up 41% from 103 in 2021)
   127 by Brian Lowe (up 23% from 103 in 2021) – 5 boxes fledged before he got to them
   24 by VT Institute of Natural Science (new entry for 2022)
   4 by Manske associate (new entry)
8. **Maine: 83** (up 80% from 46 in 2021)
   69 by St. Albans Kestrel Nest Box Project, led by Marek Plater (up 86% from 37 in 2021)
   14 by Maine Nest Box Monitoring Project (up 55% from 9 in 2021)
9. **Massachusetts: 81** (up 8% from 75 in 2021)
   25 by Joey Mason (equal to 25 in 2021)
   5 by Mike Maurer (down 17% from 6 in 2021)
   42 by Kestrel Land Trust (equal to 42 in 2021)
   9 by Arcadia Wildlife Sanctuary with Kestrel Land Trust assistance (new entry for 2022)
10. **Delaware: 28** (up 17% from 24 in 2021) by Jordan Brown with Delaware Division of Fish & Wildlife

New York City kestrel update for 2022: data from Chris Soucy
The Raptor Trust (Bird Rehabilitation Center): located in northern NJ but receives kestrels mostly from NYC. Received 32 HY (nestling/juvenile) kestrels from NYC (down from 40 in 2021)
Although, on one hand, it's good to hear that fewer HY kestrels needed rehabilition, it's a concern to see this count decrease, as this is a possible indicator that fewer kestrels bred in NYC this year. It's an odd indicator to use, but the only one we have at this time.

This Pennsylvania nestling was banded mid-meal with a leg sticking from its mouth (photo by S. Eisenhauer).

Notes from the field

Input worth sharing comes in from kestrel nest box program managers, professionals and enthusiasts. The following notes reflect some of this input.

Location, location, location

In the human world, the first three determiners of real estate value are often noted as: location, location, location. In the kestrel world, it's essentially the same: habitat, habitat, habitat. My own habitat focus for kestrel nest boxes in Pennsylvania and New Jersey is almost exclusively on pastureland. But a recent survey of kestrel nest box managers in the northeast region provides a more comprehensive view of kestrel breeding habitat:

From Logan Parker in Maine: "We suggest a few habitat types in our volunteer handbook: 'grasslands, meadows, agricultural areas, pastures, old fields, parks, shrublands, and residential areas with adequate open foraging space' with special preference for sites with prominent perches and snags. Volunteers have predominantly posted boxes in or adjacent to agricultural fields (managed for hay production)."

From John Smallwood in New Jersey: "In regard to grazing habitat, I consider cattle to be indicator species for kestrels! We have some feeding lots where cattle are concentrated and the ground is reduced to mud; we never see kestrels there. But sustainably managed pastures are great for kestrels. The ground substrate stays fairly low but patchy, which seems really good for prey populations and they're easy for kestrels to see."

From Patti Reum in Virginia: "By far grazed pastures, usually cattle, are the most successful. Probably followed by hay fields."

From Dan Mummert in Pennsylvania: “We look for grasslands such as hayfields or pastures that are within large, open landscapes dominated by farmland.”

From Mike Maurer in Massachusetts: “My nest boxes are on active cranberry bogs. Back during the first 10 years I did try to find other places and had some up near a small dairy farm, and nearby large vegetable and cornfields.”

From Larry Fischer in Connecticut: “I have always felt that lands grazed by cows are ideal habitats. Cows and kestrels go together.”

From Lance Morrow in Virginia: “What we found isn't so much a positive association of kestrel occupancy/success with any particular type of habitat, but more of a negative association with habitats that are too developed or preferred by starlings.”

From Art Gingert in Connecticut: “to answer your query about highest ranked habitat for kestrel presence and nest box success, my experience not only since my project began, but also in recent years, is that very open, short grass ‘working pastures’, if large enough (5-6 acres and more?), are ideal. And I would, of course, agree with something that Smallwood & Bird wrote in their well-known publication about ‘all things kestrel’ for the Cornell or Philadelphia Academy of Science series: large pastures, with ‘wet pastures’ being the best. I’ve come to look for ‘The Trio’ of eastern bluebirds, killdeer, and kestrels, all on site in early spring, all successfully breeding. In and about those large pastures (with farm animals actively feeding, whether randomly or in temporary sections), if one sees or hears bluebirds and killdeer, one is IN excellent agricultural land kestrel habitat - if large enough.”

From Marek Plater in Maine: “All of my boxes are as far away as they can be from trees, regardless of size. They are all on utility poles and adjacent to grass fields, many of which are planted alfalfa or clover. I also find that height placement is not critical as I have most boxes 8’ to 12’ high and all are occupied.”

From Mario Giaazzon in Pennsylvania: “For now, most of the nest boxes I have installed and monitor are on State Game Lands that have significant acres of restored grasslands. Game Lands were targeted because I have access and staff to help install them. About half of these areas are in an agricultural landscape and had an average of 5.0 chicks per nest this year. The other half are on reclaimed strip mines without as much agriculture and had a slightly smaller average clutch size of 3.4 chicks per nest. So the habitat type I rank highest are large areas of grassland within an agricultural landscape, but if the grassland is large enough I’ll try boxes there regardless of landscape because nests can still be productive there.”

From Alan Williams in Virginia: “Most of the boxes I help manage have some pasture nearby (<200m). But most boxes have multiple types of habitats available. The second most common type: hay fields . There are small numbers of mowed area, orchard, vineyards, meadow, and row crop. Another important type is ‘rough’ road edge that often is a ditch or mowed edge between the road and whatever fields the road goes by. But I have begun thinking a little differently about where I put boxes and being less concerned about what is immediately adjacent to the box and instead thinking more about what the adults and fledglings will have easy access to nearby. So if I can put up or move a box to an easier-to-manage or safer location, that might not be quite as open or have pasture right there but is pretty close or has multiple types to choose from, I will usually give it a try.”

From Jon Kauffman in Pennsylvania: Regarding your question with box site selection. This really depends on the locality. If it's in the Belleville region (with many Amish and Mennonite farms) I choose the site selection based on the willingness of a landowner, how much open space they have and if they have a durable fence row. The property real estate for kestrel box goes quickly in this region and feel you could place them anywhere and they take to it. But I look for small grazing patches where the Amish tend to sheep and horses.”

From Joey Mason in Massachusetts: “My boxes are placed around cranberry bogs on utility poles (away from trees if possible due to flying squirrels and sometimes gray squirrels).”

From Jere Schade in Pennsylvania: “My most successful boxes have a combination of undisturbed land (vineyard, horse farm, tree nursery, sod farm, fallow field etc.) and a planted field (wheat, soy, corn). I have noticed that usually right in

the middle of the four weeks of feeding young there is often a harvest of some kind and then a planting of a second crop (usually harvest of winter wheat and then planting corn or soy). The fields are disturbed but the kestrels seem to be unaffected since they also have nearby undisturbed land to hunt on."

From Brian Lowe in Vermont: "The number one habitat choice is open farmland in placement of my boxes."

From Nate McKelvie in Pennsylvania: "Most of our kestrel boxes in the Hershey area are not actually adjacent to pastures. Agricultural lands are a typical corn/bean/hay rotation for the most part. There are pockets of meadows, pastures, and natural areas that kestrels likely hunt, but it is not nearly as predominantly grassland as I would expect for the relative success that we have seen. Unfortunately, the past 15 years have seen a steady decline in barn owl nesting success around Hershey. Our most consistent barn owl location is to the north in Grantville, which has a higher percentage of pastureland due to proximity to the racetrack and casino where there are more horse operations. The kestrels are proving to be the generalists of the grassland raptors."

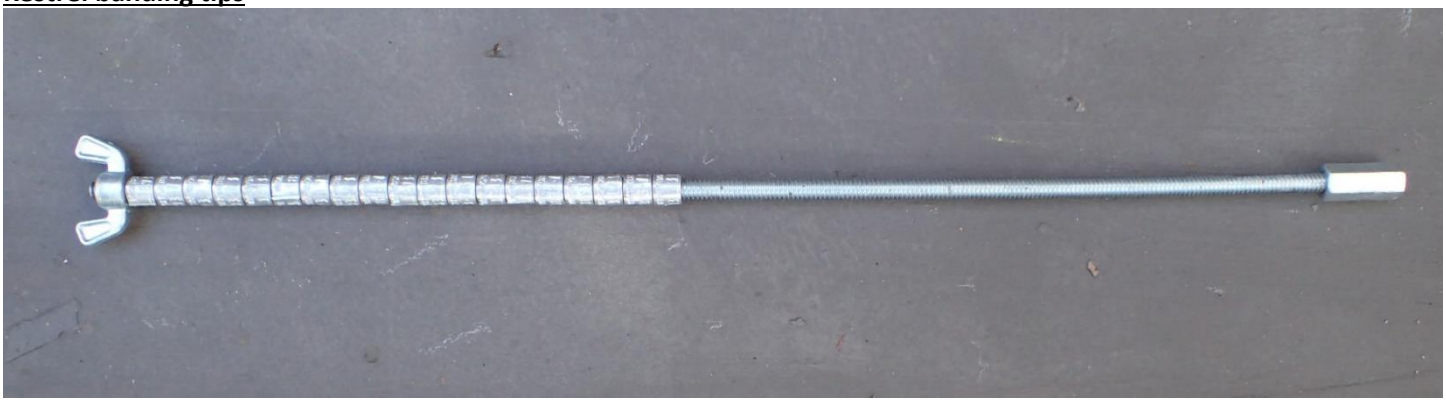
From Tim Becker in Pennsylvania: "Looking over our box locations, I think all of them have a grasslands component somewhere close-by, even if the box itself may be located in an area with row crops. Many of the grassland areas aren't being actively grazed, but are just meadows that aren't being planted, with occasional mowing to keep the brush from growing up."

From Jordan Brown in Delaware: "We primarily target grassland/meadow type areas as well as grazing areas or fields near agriculture, all of which are few and far between (and fragmented) here in Delaware."

From Steve Wheeler in New Hampshire: "I have virtually no sites designated as pasture. While such sites would be excellent, in NH only small grass-fed beef farmers utilize grazing. And the acreage (<10 acres) is generally too small for what I want for most territories. There are just too many other large acreage operations to consider. While I haven't actually categorized the sites, probably active dairy farms and hayfields (mowed at least once annually) would constitute 90% of my territories. These hayfields generally were once active dairy farms now out of business but still hayed by other operators for retail sale. For example, in one case in Northern New Hampshire an operator was shipping tractor trailer loads of square bales to Kentucky horse farms. I also have a few orchards - commercial and pick your own type operations that have done well. And the operators welcome the idea of an additional component of intergraded pest management into their system."

From Emily Hope Thomas in Pennsylvania: "a mix of fields and forest with most of the agriculture being hay fields. There is very little grazing."

Kestrel banding tips



Band transfer/storage: Anyone banding lots of small birds over a period of years has probably spent time on the ground searching – not always successfully – for dropped bands. Most kestrel bands supplied by USGS arrive on a slippery, thin wire that requires continual winding and unwinding as bands are removed. Accidental drops in the field are inevitable. The problem can be minimized by transferring the bands to appropriate-diameter steel all-thread rod. The length can be cut with a hacksaw depending on the size of your banding tool bag or box. Install a self-locking nut at the bottom end and a freer-spinning nut at the top. Rods 12" long hold 42 kestrel 3B bands. The threaded rod slows down the slide of bands, and the single nut is easier to spin on and off than twisting and untwisting a thin wire.

Holding bag used as hood: Although I involve other participants in kestrel nest box banding when possible, most of my banding is done alone, primarily due to the high number of nest boxes and geographic range of my kestrel trails (some days in 2022 involved banding over 50 kestrel young). My preferred bags are white in color, soft cotton, 10"x16" in size, with a draw string. This size bag allows banding to be done with kestrels kept in the bag, with the bag acting essentially as a hood to calm the kestrels. Pull a leg from the bag for banding. Check out the bird afterwards (or before), for health, sex, age and other measurements. If human participants are involved, this procedure is often altered to provide a more hands-on observable banding process.

Bucket and hook recommendation: A 2-gallon white plastic bucket with handle works well for holding kestrels removed from nest boxes and placed in bags. The larger 5-gallon bucket is preferred by some banders, especially if holding bags are not being used. Using buckets or wicker baskets along with bags provides added nestling protection, particularly on days when human participant numbers are high. A painter's pail hook (pictured below) increases security when hanging buckets from a rung on a ladder side or from your belt loop, keeping both hands free (advisable whenever on a ladder).

Six healthy fledglings in boxes

In the past eight years I've occasionally had kestrel nest boxes with six eggs, but none ever hatched out to fledge six young, until this year. Four of my 136 occupied Pennsylvania boxes in 2022 fledged six young, with at least three more boxes having six eggs but fledging less than six (eggs aren't counted in all my boxes since I try to avoid scaring adults off eggs during incubation). An explanation for breeding seasons with high numbers of large kestrel clutches (over five eggs) is suggested by Orozco-Valor and Grande (2016) as: "probably the result of exceptionally good years in food resources . . . or at least the result of the birds' perception of the year as exceptionally good".

Inside one of the Pennsylvania six-fledgling nest boxes (photo by S. Eisenhauer)

The rest of the starling skeleton was hanging inside this kestrel box where four young fledged (photo by S. Eisenhauer)

Landfills and kestrels

Kestrels – and many other birds – are attracted to both active and abandoned municipal waste landfills. The older and larger the landfill, the more attractive they are to kestrels. Once a landfill reaches a certain age, methane is generated from buried decomposing waste. Some landfills capture some or most of this methane for energy use. Modern municipal waste landfills inevitably use methane collection systems that lead to burner pipes sticking from the ground, with invisible or visible flames used to burn off the gas. These burners can scorch birds that try to perch on the vertical vent pipes, often resulting eventually in death. Birds flying close over the flame can have feathers burned off (see: Burners & Raptors – Keeping Company With Kestrels). However, assuming this concern is closely evaluated, landfills can be considered as sites for kestrel nest boxes, particularly once the landfills are "closed" or in their last years of active use. Closure typically means most or all of the land must be managed as grassland for decades, with no deep-rooted woody vegetation that would penetrate the "cap" located a few feet below ground level, resulting in kestrel habitat in often unlikely areas surrounded by development.

Kinsley's Landfill in southern New Jersey is an example of how kestrel reproduction can be enhanced in a seemingly-inconducive area: no other kestrel nests have been reported in recent years within 13 miles of the landfill. Municipal landfills in the northeast states are required to have post-closure plans. Some become golf courses; others are covered – like Kinsley's – with solar panels, with grass underneath the panels and on the landfill slopes. In the past three years at this landfill, two kestrel nest boxes have successfully produced 22 young. The landfill was closed to municipal waste 35 years ago; the single flare is reported to be operating now at 10% of permitted capacity, with plans in place to relocate it to an enclosed building further downslope. With all the solar panels and innumerable other perches on the property, the single flare was assessed as being a minimal kestrel threat. Staff at the current landfill management agency, Transtech Industries, are excited to have kestrels breeding on the property (the company president participated in banding), and the local township mayor – an avid birder – is equally excited.

Banded kestrel nestling from Kinsley Landfill box (photo by S. Eisenhauer)

5,000 Mongolian nest boxes for Saker falcon

and a partnership possibility with certified American kestrel falconers

The Saker falcon is a globally endangered species subject to high mortality and nonlethal trapping as a favored bird of prey for use in falconry for thousands of years (Kovács et al 2014). Thousands of nest boxes have been installed – primarily in Mongolia (Rahman et al 2014, Lombard 2019) but also in Hungary and Slovakia – in the effort to reverse the decline this species has experienced. In Hungary it is noted as "a mythical bird for Hungarians" that, due to its high economic value in falconry, has been monitored through centuries although not with scientific scrutiny (Bagyura et al 2012). In Slovakia: "Creation of artificial nesting opportunities is considered as the most important management measure for the Saker Falcon in Western Slovakia. At present, the whole population is nesting in artificial conditions. Without implementation of management measures, the nesting population of Saker Falcon in Slovakia would likely disappear" (Chavko and Deutschová 2012). The falconry community has been an important partner in this falcon's recovery effort. This partnership is worth examining regarding the recovery of our own small falcon: the American kestrel that is also legally trapped for falconry in many states.

In the spring of 2022, I was contacted by a licensed falconer to see if he could take two nestling kestrels (a male and female) from one of my Pennsylvania boxes. This option was explored, considering that it might be better for falconers to utilize nestling falcons rather than trapping adults, since the survival rate until next breeding season in the wild is lower for nestlings than for adults. After consultation with our New Jersey state biologist, it was determined consideration could be given if the falconer released the involved falcons in time for the spring breeding season. This option was unacceptable to the falconer but, interestingly, there's a somewhat similar historical parallel to this approach in Arabia:

> The Bedouin falconry tradition probably extends back over thousands of years and is based around the annual migration seasons of the Saker falcon and its prey. Sakers migrate south in winter, to the Arab Peninsula, along with Houbara Bustards and Stone Curlew. The Bedouins learned to trap the Sakers, train them rapidly, and hunt bustards and curlew. As the warmer weather of spring heralded the northward migration, the trained Sakers were released back into the wild. This entirely sustainable custom was practiced from time immemorial (Lombard 2019).

During most kestrel nesting seasons I find boxes with nestlings underweight for their age. If the young are calling for food when accessing the box, and/or the young are all underweight, these are signs they may have been abandoned, food sources are limited or something has happened to one or both parents. Also present in boxes may be runts: undersized and underweight nestlings often assumed to be the brood's last-hatched. I can't help wondering if, instead of falconers trapping healthy adults for falconry training, it might be better to make available underweight (either abandoned or unlikely to survive without assistance) nestlings to be nursed back to health for falconry use?

The response to the Saker falcon's decline has other thought-provoking lessons that may apply to our American kestrel. Lombard, in his 2019 report *Sustainable Conservation of the Saker Falcon,* notes:

> As a reaction, the United Arab Emirates decided to cease using wild-taken Saker falcons and to opt for captive-bred birds; this resulted that at least 95% of falconry birds used in the Emirates are captive-bred. The Emirate of Abu Dhabi led the response to investigate the cause for the decline and efforts to restore the iconic Saker falcon. As the availability of nest-sites is the limiting factor to Sakers breeding in the Eurasian steppes, the Emirate of Abu Dhabi developed a project to create 5,000 artificial nest boxes in Mongolia. In the process, it was noted that huge numbers of Saker falcons, and other raptors, were electrocuted on medium voltage electricity distribution lines that snaked across the endless rolling steppe. The poles of these lines provided the only elevated perching points for birds of prey; poor pole design made them perfect raptor killing machines.
>
> Research was undertaken to establish the magnitude of this decimation and the results were horrific; approximately 10,000 raptors, of which 4,000 are Saker falcons, are electrocuted annually in Mongolia alone. This can be extrapolated across the immense Saker distribution range, which extends from Hungary in the west, to China in the East, and from Siberia to East Africa. The electrocution is selective of larger birds, so more female Sakers than males are killed. Clearly such losses are unsustainable. . . .

The establishment of the 5,000 artificial nests in Mongolia resulted in over 500 of these being occupied by breeding Saker falcons by 2014. About 2,500 young birds are now produced annually. Since the Saker is a particularly fecund species, a 10% harvest of young birds is completely sustainable.

Three lessons from this report are:

1. Although captive breeding can play a role in falcon recovery, a more sustainable approach might focus more on addressing issues associated with falcons breeding in the wild. In the case of Saker falcons, redesigning electric pole systems to minimize or eliminate electrocution deaths is highly important. More appropriately built and located nest boxes is also important. In the United States knowledge of the role of kestrel nest boxes is improving, but perhaps not enough attention is being paid to other concerns, such as airport deaths.
2. The 10% occupancy rate of Mongolia's artificial nest boxes (roughly 500 of 5,000) is considered a success story, whereas with American kestrel nest box programs this percentage might be considered less than a success. A focus more on the increase in annual production, and less on occupancy percentage, may be a better approach.
3. Embrace seemingly-unlikely partners – such as the falconry community – and promote participation of neighboring countries. Canada and Mexico play significant roles in migratory kestrel survival, both with breeding and wintering populations. More attention paid to kestrel activity and research in these countries could be very helpful.

2022 publication about New Jersey and Pennsylvania kestrel nest box program

The journal *Pennsylvania Birds* recently published a summary of a New Jersey and Pennsylvania kestrel nest box program. For anyone interested who has not already received it, the following link provides access:
Microsoft Word - kestrel.docx (pabirds.org)

Photo by F. Portmann in NYC

Kestrel escort of immature red-tailed hawk in NYC (photo by F. Portmann)

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